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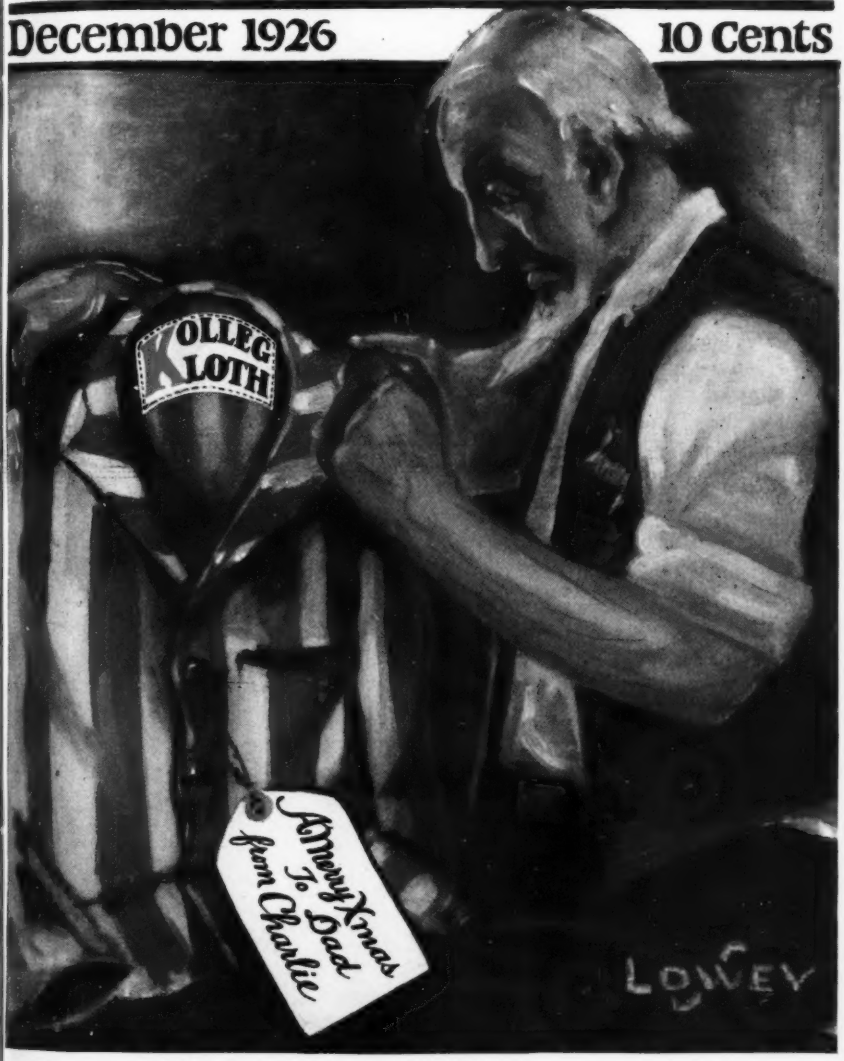

Inside: Specialism—A Farm Extraordinary—The Business of Horticulture—Reaching Our Potato Goal—North Carolina

To Serve You Better

AT this joyful holiday season we put aside business matters and wish you a happy Christmas and prosperous New Year.

In the coming year we shall try to serve you better than ever before. As in the past, our Soil and Crop Service will carry on its policy of cooperation with scientists, teachers, extension workers, the fertilizer trade, and the farmers for better and more profitable crops.

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Better Crops

The Pocket Book of Agriculture

The Whole Truth—Not Selected Truth

VOLUME VII NUMBER FOUR

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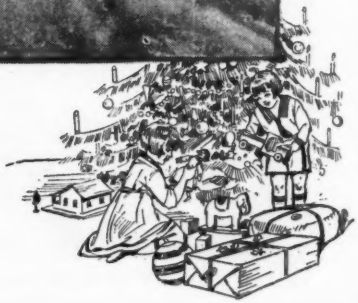

Getting Ready

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VOL. VII NEW YORK, DECEMBER, 1926 No. 4

¶ *Jeff sets about to discuss the important subject*

SPECIALISM

By

Jeff McDermid

DOCTOR Foster, our family physician, who is a general practitioner, called me up last night to tell me what he thought was a good story, a clever "take-off" on specialists.

The story, as I heard it from him, goes like this: It seems that a certain specialist was disturbed in his study by the abrupt entrance of a woman, distraught, who begged him to come at once—her little boy had swallowed a button!

"What kind of a button was it?" asked the specialist.

"A pearl button off his pajamas," answered the woman, nervously wringing her handkerchief. "Please hurry, doctor—he is choking to death!"

"I am sorry, madam. You had better see Dr. Perkins; he specializes in pearl buttons from pajamas. You see, I concentrate upon celluloid buttons with an embossed *motif!*"

DOCTOR FOSTER, who specializes in everything especially, from bunions to green apple colic, is very bitter against the modern trend in his profession toward, as he terms it, "over-specialization"—the tendency of his fellow doctors and surgeons to concentrate for life upon one phase of their science—and hugely enjoys such a story as this which seems to prove

ridiculous the position modern specialists assume toward their chosen work.

The truth is: the whole world of mankind is and has been steadily veering toward finer and finer specialization or "specialism."

"Specialism," the Standard Dictionary tells us, "is the confining of oneself to a particular line of study or work." I do not think this definition accurate nor fine enough. According to this definition any doctor, farmer, lawyer or machinist is a specialist, for each "confines himself to a particular line of study or work."

No! A specialist is one who "confines himself to a *certain tiny branch* of a particular line of study or work." Anyone who raises plants and trees is a nurseryman, but every nurseryman is not a specialist. If, like Burbank, a nurseryman, after carefully considering his fitness, ambition, willingness and desire to benefit the rest of mankind at the expense of his own pocketbook, chooses to concentrate upon creating a new white blackberry, or corn with an even instead of an odd number of rows, then he becomes and is a specialist.

The question is this: Is specialism good for you and me, for mankind, for civilization?

Specialism, to my notion, is man's unconscious fitting of his energies to a constantly renewing, crowded world. In the fitting of his talent to the needs of man, he unconsciously advances the civilization of which he is a part, increases his own comfort, satisfaction and enjoyment and advances to a success which would be quite impossible had he not specialized. Yes, I think specialism not only beneficial but necessary to you and to me, to him who specializes, to civilization.

As usual, there are two sides to the question. Those, like Doctor Foster, who condemn specialism, state that the doctor who concentrates upon the removal of celluloid buttons with an embossed *motif* lessens his usefulness to the community which he serves. By refusing—by unfitting himself, in fact—to go outside his tiny restricted sphere of activity he cuts down by great degree, they claim, the number of cases he can be helpful on. In addition, they state, he becomes lost as a diagnostician and is prone to trace all disease or ailments to his specialty which he knows how to cure.

These enemies of specialism do not have the effrontery or hardihood to say that the specialist does not become master of his specialty. Most of them, on the contrary, will admit that concentration upon one phase of any line of work gives him who thus concentrates a knowledge of that one branch that no general all-'round man can hope to acquire.

And here, I believe, lies the error in their condemnation: their shafts of ridicule are hurled at the wrong target; they condemn specialism when they should reproach the method of finding the right specialist in an emergency.

Even Doctor Foster would admit that, had the boy in his story but swallowed a celluloid button with an embossed *motif*, the specialist his mother called would have done a better and quicker job of removal than any general doctor—surely there must be a *technique* of celluloid button removal which only a specialist has at his finger tips!

The mother's error lay in visiting, in her grief, the wrong specialist. And this was not her fault, for the age of specialism has far faster advanced than its ability to record and index itself

(*Turn to page* 61)

Mr. Gay thought a lion farm ought to have typical buildings

A FARM EXTRAORDINARY

By V. V. Hostetler

Covina, California

CALIFORNIA claims the most novel farm in the world. The Gay Lion Farm at El Monte is the only place where lions are raised for the commercial market. It is becoming as well known as the ostrich and alligator farms that for years have been points of interest to every tourist and resident of California.

In 1919 Mr. and Mrs. Charles Gay started lion raising in Los Angeles with the purchase of a male and two females. A few years previous Mr. Gay, a Frenchman with wide experience in handling wild animals in captivity, had been chosen by David Horsley, pioneer motion picture producer to bring 75 animals, which included pumas, elephants, polar bears, lions and leopards to this country from England where they had been purchased.

In the seven years that Mr. and Mrs. Gay have been breeding lions they have bought, beside the three original animals, two males and two females and from these seven animals they have raised 100 young. The mortality rate Mrs. Gay estimates has been only five per cent.

Three years ago Mr. and Mrs. Gay secured an ideal five-acre site for their farm at El Monte on a main boulevard 15 miles from Los Angeles. When asked where they obtained the design for their unique and effective buildings Mrs. Gay replied, "Oh, Mr. Gay just built what he thought a lion farm should look like." With its unusual turrets and stockade and its

wealth of tropical trees it looks indeed the typical lion farm.

Although its stock exceeds 100 the Gay Lion Farm has no animals for sale. The market of the United States alone, calls for from 150 to 200 lions per year and not until their stock numbers 250 and they can supply this demand will Mr. and Mrs. Gay have animals for sale.

Lions have never been sold with pedigrees. Mr. Gay is now working out a system for registering his stock. The first requisite is that a lion shall look what he is, the king of beasts. The principal points considered are: condition of coat, weight, straightness of back and limbs.

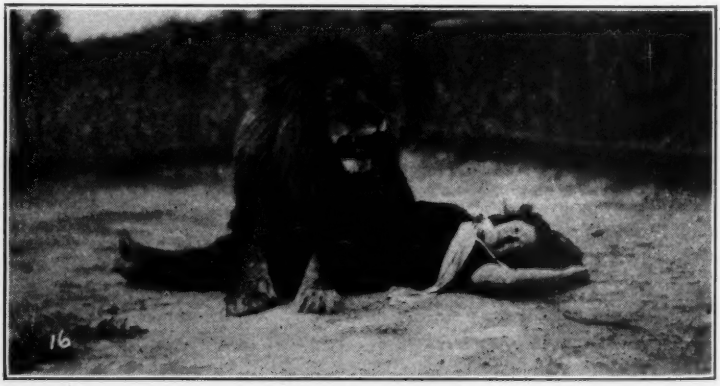
The lion market is found in zoos, menageries and among people who have a fancy for a baby lion as a household pet. Cubs are sold for approximately $350 and the average price for a full grown animal is $1,200 to $1,500. However, the highly trained lion that can be used in motion pictures and exhibition acts demands a fabulous price. Mr. and Mrs. Gay have one male that for four years has brought them by his work in moving pictures $10,000 per year. Based upon his earning capacity, which is due to Mr. Gay's personality and training, they estimate this animal to be worth $50,000.

Animals from the Gay Farm are used in the majority of films that feature lions and many such pictures are taken at the farm which is a perfect setting for stories of the tropics. In a recent picture of this kind the Gays had 35 lions on one set.

The Gay Lion Farm furnishes the lions used by the Christie and Fox Comedies and in the Mack Sennett pictures. A few of the well known actors with whom Mr. and Mrs. Gay and their lions have worked are: Gloria Swanson, William Desmond, Natalie Kingston and Madaline Hurlock. The animals are trained only by their owners. Mr. Gay handles the full grown lions and Mrs. Gay works with the cubs.

Aside from the revenue which they derive from the motion picture companies the admission fee of 50c. brings in a substantial return. The novelty of the business draws many sightseers who exceed 2,000 during some weeks. There is also a good demand for photographs of the lions and of the farm.

The hour of greatest interest is 2 P. M. when the lions get their



One lion valued at $50,000, earns $10,000 a year in the movies

daily ration of 10 to 15 pounds of meat. The lion does not naturally like beef and it does not agree with him. The antelope, zebra and gazelle are his natural food and the flesh of similar animals such as the horse, mule and goat is the best food that can be procured for him in captivity.

Their business has become so widely known that Mr. and Mrs. Gay have no trouble in getting sufficient animals for food. Only live animals are bought. As a lion cannot eat refrigerated meat the animals are killed every day and the meat is kept under the most sanitary conditions.

Realizing that a good digestion is the first essential in the raising of superior animals the Gays have reduced their feeding to a science and vary the diet according to the climatic conditions and the individual needs of the animals. Once in two months there is a feeding of milk and eggs which acts as a laxative.

Lions have no special breeding season and for this reason there are always cubs on exhibition. While most of the mothers are as devoted to their young as an old cat to her kittens there is an occasional lioness which dislikes or grows tired of her cubs. Mrs. Gay has raised 60 cubs on the bottle and has had at one time nine cubs for which she was heating diluted goat's milk every two hours. Lime water, goat's milk and eggs are given on as strict a schedule as in any well regulated nursery.

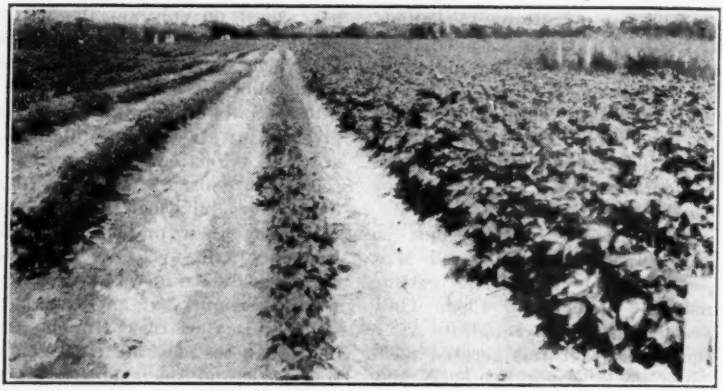
There are usually three or four in a litter and when the cubs are raised by their mother they are weaned at six weeks as they are more easily trained when taken from the lioness at an early age.

The diseases that trouble the lion raiser the most are indigestion, toothache and pneumonia. When a cub develops a cold he is put under a small tent and given a steam treatment and his chest is rubbed with lard and camphor.

Mrs. Gay cares for and trains her cubs much as she would children. When they are good she pets and praises them and when they are bad she cuffs them. There are many animals that she claims prefer to be with her or Mr. Gay rather than with other lions. Although short tempered the lion is more like a human being than any other animal.

Without doubt the sympathy and understanding which Mr. and Mrs. Gay put into lion raising has been the chief factor in their success.

The Gays cannot supply the market demand for lions



The cotton plants on the right had a complete, well-balanced fertilizer while those at the left had received no fertilizer for six years

The Long *and* Short *of* It

¶ *In which the advantage of long-time over short-time experiments is brought out.*

By J. S. Carroll

THE work of the agricultural experiment stations in supplying information as to the plant food requirements of our various soils and crops is invaluable. Our knowledge as to the proper and profitable use of fertilizers is founded upon the results of well-planned and painstaking field experiments conducted by these stations through a series of years.

So many factors influence the results from fertilizer experiments that it is of the greatest importance for the work to be carried on for a period of years. Climatic conditions play a very important part. Results in a dry year may be entirely different from those in a wet year. Sunshine, wind, and temperature have their influence. Insects and diseases are to be reckoned with.

One year's results may be misleading while two years' results are often contradictory. It is the average result for a series of years that counts.

Short time experiments came up for criticism at a recent meeting of fertilizer salesmen held at Poplarville, Mississippi.

According to a write-up of the get-together in the October issue of

(*Turn to page 42*)

The BUSINESS *of* HORTICULTURE

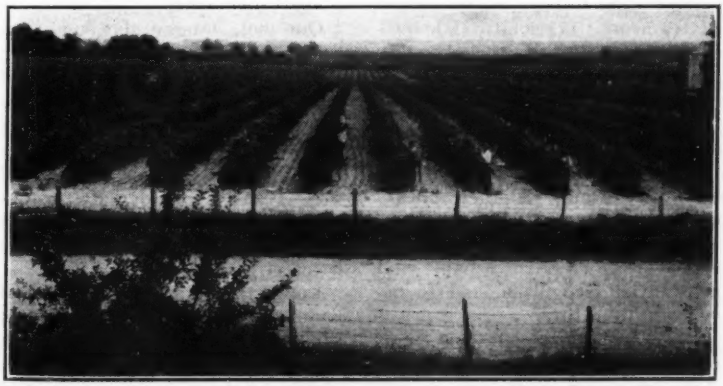
By T. J. *Talbert*

Professor of Horticulture, University of Missouri

THE occupation of growing fruits, truck crops, and vegetables is one in which the home and the business are closely associated. It is for this reason that the average American farmer has been content, until recently, to run his business without profit. His farm has furnished him a home and for the most part a comfortable living. Of this small investment he has taken little account.

The decade prior to 1890 was an era of cheap land, but the days of cheap land in Missouri are past. The fruit or truck grower of today is a user of capital, which must pay, besides other fixed charges, interest and dividends if he is to succeed and stay in the business. This necessitates applying the same principles to his problems as to problems found in every other successful business.

The growing of horticultural crops, therefore, requires as much thought and intelligence as any other business. Yet we hear the old saying "anybody can farm." How untrue this is! Anybody may barely exist on the farm, but to make a good living, enjoy a few of the pleasures of life and educate the children, requires as much



A fine vineyard with apple orchard (background) in the Ozarks

or more brains to be successful as in any other business or profession.

Lincoln gave expression to the idea that no nation need ever fear for its future when the fundamental facts of agriculture became common knowledge. Some one has also said that civilization begins and ends with the plow. It is also true that the progress of nations heretofore and hereafter may be measured by the degree of intelligence with which that plow is used. It is no new doctrine or idea that intelligence aids industry.

The grower must think, plan his work and keep posted upon recent experiments and observations which may aid him in his work. This is just as important for him as for the minister, lawyer, doctor, statesman, merchant or any one else performing any other line of work.

AGRICULTURE is now established as a grammar grade subject in practically all of our common schools, while in high school and vocational schools, agriculture is given special emphasis. Agriculture as well as other work is now being taught to boys in the United States army. Agricultural knowledge in all of its branches is being disseminated by many practical and satisfactory methods. It is strange, however, that the oldest occupation of man, the most important and fundamental, the basis upon which all other endeavors of man are built, Agriculture, should be the last field of human endeavor to receive worthy and substantial recognition and to develop a literature.

There are three phases of horticulture: (1) Business phase, (2) Arts phase or crafts phase, (3) Scientific phase. The growing of apples and potatoes for profit is a business. The development of an apple from a flower or the growth of tubers from a potato plant is a natural phenomenon. Increasing the fruitfulness of the tree or the potato are useful arts or crafts and doing it for profit is a business. Knowing how these things are done, how to control the natural forces so as to bring certain results about are matters of knowledge. When all this knowledge is systematically arranged and made usable we have a science. Such is horticulture.

It may be that the great and constant gamble with diseases, bugs, weather and markets is one of the things that make fruit and truck growing so fascinating. The general public does not realize that horticulture and agriculture are just about as certain as speculating in oil stocks. No one can observe the following facts and doubt this statement:

A few days of rainy cold weather when the apple trees are in full bloom may reduce the yield 50 per cent or more.

A late spring freeze may half ruin a crop of strawberries or grapes.

The potato yield may be reduced from 25 to 50 per cent by a short dry spell.

One hot, muggy day may entirely spoil a crop of beans.

To these risks must be added the fact that countless diseases and insects are at constant war with the grower, and that after he has brought his crop through all these hazards and dangers he has practically nothing to say in many instances about the price he receives.

Loose thinking and radical and revolutionary actions on the part of a few vitally concern us all. We should be real fruit and vegetable growers, keeping our feet

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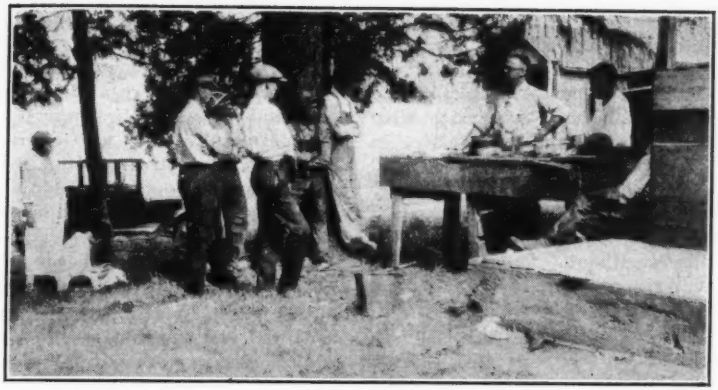


These farmers stayed after the meeting to ask questions

Campaigning *for* Fertilizers

By O. B. Price

Soils Specialist, Michigan State College

THE Soils Department of the Michigan State Agricultural College had realized for some time the need for an educational campaign on the use of fertilizers. This campaign was organized in the fall of 1925 and launched during the early winter.

In any campaign several things must be considered. First, the attention of those whom it is desired to reach must be secured. Second, they will have to be sold on the program of work. Third, they will have to have a real desire to accept the program, and last, they must be willing to put forth some effort on their own part to carry out the suggestions.

Preliminary to any campaign a survey should be made to find out the existing conditions. A list of fertilizers offered for sale in Michigan by the various fertilizer companies was secured. It was found that there was a wide range of analyses from low grade to high grade goods. Many of the unit changes were only one per cent. Far too many brands were being sold that were low analyses and many more that were "legally" high analyses but containing less than 16 units of plant food, the minimum plant food content of the standard list recommended by the soils department of the Michigan State College.

A survey of the problem from the standpoint of the farmer or user of fertilizer revealed still other facts. There were five classes in this survey.

First. Many farmers were buy-

ing fertilizers by brand name only and having no idea of the plant food content or the ratio of the plant food constituents.

Second. Many were using what the dealer happened to have in stock. Sometimes it was suited to his soil and cropping but very often it was not.

Third. Some were buying fertilizers without reference to brand, analysis, or crop to be fertilized. Many of these bought by the dollar's worth. They would decide to use $30.00 worth of fertilizer on their wheat or some other crop and of course wanted the greatest number of pounds possible. They usually bought one ton of low analysis fertilizer.

Fourth. Some farmers knew what fertilizer to use by studying their soil conditions and cropping system and by using the advice of the college and county agricultural agent. In many cases they could not get it easily because the dealer did not have it—but had something just as good.

Fifth. Those farmers who were using the right analysis and the right amount, knew why they were using it and were getting results.

IT was evident from this survey that the fertilizer dealer was in a large way responsible for the fertilizer used in the different communities. The fertilizer dealer in many instances was a mere order taker rather than a salesman. It was realized of course that the farmer was not using good business practices in the selection of his fertilizer, and that an opportunity was presented to put both the dealer and farmer on the right road in this respect.

Accordingly the Fertilizer Campaign was launched, the object being to correct the existing conditions and carry all the information possible to the dealer and farmer relative to the buying and use of fertilizer.

The fertilizer manufacturers were approached regarding the plan and offered their support to the movement. They also offered to furnish a man from the Soil Improvement Committee of the National Fertilizer Association to assist in these meetings. The assistance given by the Chicago office of the Soil Improvement Committee, both in and out of the meetings, has been very helpful.

THE Campaign proper consisted of a series of meetings with the fertilizer dealers by counties at a time when they were considering their spring or fall contracts. One or two meetings were held in the county, depending on the local conditions and the possibility of reaching most of the dealers.

The question of getting the dealers to attend was one of the first problems. The following plan proved very successful. A list of fertilizer dealers was secured through various sources. The county agricultural agent was furnished with one copy and another retained in the office of the extension specialist. After arrangements had been made by the county agricultural agent for the meetings in the various counties, a notice was mailed to all the dealers listed in each county by both the county agricultural agent and the specialist, giving them an outline of the work and asking them to attend and take part in the discussion. The dates of the meetings in each county were sent to the fertilizer companies operating in Michigan and a letter attached asking them to write all their dealers in the county and urge them to attend. The county agent also sent each dealer a personal letter and in many instances saw each dealer personally.

Beginning three weeks before the meeting an article relating to fertilizers and the campaign was presented each week through the newspapers of the county.

Each dealer in the county, whether he attended the meeting or not was placed on the mailing list to receive new and timely material on soil fertility practices and fertilizer usage. He will act as a sort of local leader on fertilizer practices. Posters, charts, and literature to enable him to interest the farmer were furnished him.

The farmers' meetings were conducted somewhat differently. From 10 to 30 meetings per county were held, the time and place of the meetings being left to the county agricultural agent or other local interests. At these meetings everything that a farmer should know concerning fertilizers was presented and discussed. Other soil fertility practices were discussed in relation to fertilizers.

The publicity was taken care of in much the same manner as with the dealers. Articles appeared once a week in each of the local newspapers for several weeks before the meetings. Posters in several colors that were attractive were used in each township or community indicating the time and place of meeting. The dealers cooperated by interesting the farmers to attend. In counties where very little fertilizer was used, demonstrations were used to show the effects of fertilizer rather than talk to the farmers about something of which they had little or no conception.

The Campaign so far has been very successful. The attendance at the meetings has been good and the results obtained in raising the standard of fertilizer usage has been very gratifying. During the first year of this Campaign just ending, the Campaign was carried to 12 counties. There was an average attendance of 26 for the dealers' meeting for the 15 meetings held. This was considered good in view of the fact that there were on the average only about 60 dealers per county, (one of the counties had only six dealers). Ninety-one farmers' meetings were held with an average attendance of 37. All of these meetings were attended by the specialist. From five to twenty meetings per county were held.

The subject matter in these meetings was more or less fundamental, with recent experimental

(*Turn to page* 58)

Interested farmers looking over the fertilizer demonstrations

—*With acknowledgment to the Universal.*

The mechanical milker shortens the hours on the milk stool

Unbending Backs

By M. L. Hopkins

Madison, Wisconsin

EVER since dairying became a separate industry men of inventive minds have been trying to harness power and machinery to do the milking.

As a result many dairymen of today have journeyed a long way from our grandfathers' back-breaking method of procuring "the best beverage of all ages."

It may still be remembered that the twice daily chore of milking, during milk weather, in the none too remote pioneer days consisted of driving the cows, few in number, into an enclosure that served as a barnyard, where the farmer carried his stool and pail from cow to cow, often milking them under a starry canopy. On rainy days and in wintry weather the lowly cow shed was brought into service.

The stories told by my paternal grandmother of her pioneer experiences on a Wisconsin dairy farm, I find, are typical. In the dreary and anxious winter of 1886, Grandmother would leave her sick husband and small son in the house while she drove the few cows into a half-shed shelter, which consisted of a rough frame work covered with straw. Very frequently one of the little herd becoming impatient and restless would "bolt," a simple matter in those stanchionless days, upsetting the milk pail in the process. With numb fingers and a chilled body, the anxious wife and mother would stumble through the snow after the unruly cow, which might be found at the neighbor's water tank. During the summer months, Grandfather

Ewing Galloway, N. Y.

Milking is a chore, costing much time and a lot of patient labor

in FARMING

¶ *No. 5 of the "labor-saving" stories*

milked his cows in a pasture located some distance from the farm, carrying the pails of milk home night and morning, which must have been a back-bending process.

As the pioneers developed their farms, the rough sheds were replaced by barns. No longer was the milker held at the mercy of the cow's moods, for wooden stanchions held each one in place. But even the farmer, his wife, children, and often a hired man, found it necessary to cramp themselves beside and beneath the cows morning and night. Even though the herds were small, because of the time and labor requirements, milking was not a much sought after chore.

With the invention and development of the milking machine came some unbending of weary backs. Long periods of squat and squeeze between rows of restless cows were happily forgotten. For whatever task the care of a milking machine may entail it has relieved, unmeasurably, aching forearms and fingers after the weariness of a hard day's work in the field or before the real work of the day began. The lessening of the needed hand labor and long hours in milking has made possible larger herds, and more hours in the fields during the busy season.

JUST as the grain binder opened the way to increased grain production, enabling the farmer to plant and harvest many times the acreage he could take care of by hand methods of harvesting, so also does the milking machine enable the farmer to greatly enlarge his herd and increase his production.

Although the milking machine is ordinarily placed alongside of such new inventions as the automobile and the radio, it dates back earlier than many of our long accepted conveniences. As early as 1819 men were dreaming about the possibility of milking by machine, but not until 1878 was the work begun in earnest. The early milking machines were naturally crude; in fact, the difference is as pronounced between the milking machine of 1896 and the present-day perfected natural milker, as that between Cyrus McCormick's first crude reaper, made in 1831, and the miraculous efficient self-binder of today.

Perhaps the first principle tried in mechanical milking was that of drawing through tubes, by means of gravity, the milk from the cow's udder. The theory of this first milking machine rested upon the idea that the milk would flow out by the force of gravity, but the idea was impractical. In the first place, the insertion of tubes in the cow's teats required as much time and energy as hand milking; in the second, the operation was injurious. The tubes would frequently cause so much irritation in the udder that the cow would hold back her milk.

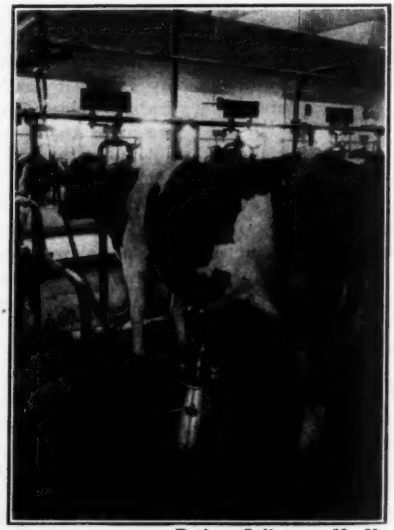
While some inventors were endeavoring to develop the gravity milking tube into a practical machine, which later proved impossible, others were working upon a pressure theory. This second method of mechanical milking was that of squeezing or pressing the milk from the udder; the application of continuous downward pressure at the base of the teat next to the udder forced the milk out. After various experiments had been tried in the development of the pressure mechanical milker, hand milking, it was concluded, was the only successful application of this principle of milking.

The files of the federal patent office indicate that even before 1901 numerous patents had been granted to inventors, which is proof that extensive inventive genius had been directed toward devising and developing a successful mechanical milker.

None of them, however, fulfilled the requirements of the dairyman and the farmer. In 30 years, 50 different milkers of the suction type alone were placed on the market, out of which only a few proved even slightly satisfactory. As 1876 marked the development of the pressure type machine, 1926 may be regarded as the fiftieth anniversary of the first productive study of mechanical milking.

Permanent success was

(*Turn to page 54*)



Ewing Galloway, N. Y.

Mechanical milkers require skill in operation

¶ *A reprint from Citrus Leaves*

The Case *for* Fall Fertilizers

By A. L. *Chandler*

Mutual Orange Distributors, California

PROBABLY no phase of the fertilizer program is more subject to discussion and argument than the use of fall fertilizers heavy in phosphates and potash. There is a rather general agreement that spring fertilizers should contain plenty of available nitrogen and that they should be applied just prior to the start of the growing season. But when it comes to the question of the fall season there is much difference of opinion.

Experimental work in California shows no apparent results from the use of phosphate and potash on the Rubidoux plots, yet most every one agrees that this work is inconclusive and cannot be applied in general fertilizer practice. In fact most fertilizer authorities and many of the more successful citrus growers feel that phosphates and potash are just as necessary in California fertilizer programs as in the rest of the United States.

As a result of this difference between the ideas of practical citrus growers and the results of citrus experiments, we will be much interested in the series of experiments now being started on the new orchards at Riverside. Here it will be undertaken to prove the case for phosphates and potash as well as other valuable facts concerning citrus fertilization. The new experiments, starting this year, are being laid out with a great number of different tests and check plots. Some of these will have complete fertilizers, others will have only cover crops, others just nitrates or potash or phosphates. An attempt is being made to make these experiments complete enough so that the results will be of great value to the citriculture of California. However, the results from these tests will not be forthcoming for five or possibly ten years. Meanwhile we must go on fertilizing our citrus crops and decide from what data we have how we are to carry on this fertilization.

THE reason that many growers are using fall fertilizers containing phosphates and potash is that they feel that the orange tree that is producing large crops every year is likely in the fall months to call on the soil for larger quantities of these materials than is made available in the normal way. When the tree is maturing fruit and wood it is thought to require large amounts of these plant foods within a comparatively short time. A well known authority has stated that a good crop of

(*Turn to page* 58)

The South Grows

By R. B. *Fairbanks*

PECAN growing in the South is rapidly reaching the stage where it might be termed a major crop enterprise. In 1920 there were more than 4,500,000 trees in the 13 southern states, a little more than half of which were old enough to bear. It is estimated that at present there are between 6,000,000 and 7,000,000 of these nut trees in the South. When it is remembered that it was comparatively a few years ago that actual planting of pecan trees began, this record is rather a remarkable one. Of course the seedling pecans in Texas, Louisiana, and other Mississippi Valley states have been with us for many years, but it is only in recent years that the budded or grafted pecan which produces the so-called paper shell nuts was planted extensively.

Now, that the superiority of the highly bred so-called paper shell nuts over the seedling is seen, thousands and thousands of seedling trees are being top-worked over to these improved varieties each year. Also those sections that formerly grew only the seedling pecans, are planting large quantities of new trees, of the improved varieties.

Texas of course is the leader in the production of seedling pecans. Georgia is the leader in the production of the improved varieties, but all the southern states are making very rapid progress in the planting of these improved varieties.

A well-kept and profitable pecan orchard in Georgia

Our Xmas Pecans

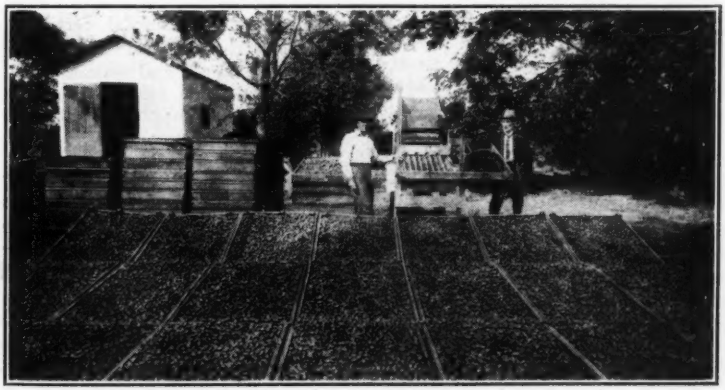
¶ *The last course of our American dinner is becoming a first crop to some Southern farmers*

Almost any type of soil that is well drained and will produce a good crop of cotton, corn, etc., will produce good pecans. It is advisable to avoid the very deep, poor, sandy soils in planting pecans, and yet we have seen in Florida a most highly profitable pecan orchard planted on a poor, very deep, sandy soil. Of course the owner of this orchard has fertilized his trees liberally with both commercial fertilizer and cover crops.

One thing that the pecan especially likes is a soil well filled with organic matter. For this reason, it is advisable wherever possible, to grow heavy cover crops such as velvet beans, etc., and turn under. This should be done if convenient a year or two before the pecans are planted, or certainly should commence immediately afterwards.

A point that must be taken into careful consideration is that the pecan will not grow in a poorly drained soil. Many have imagined that they would do this because so many fine seedling trees are found on bottom lands. This is not true, however, because even those seedling pecans that have done well in the bottom lands are usually on lands that are fairly well drained during most of the year.

WHEN planting of these improved varieties first began a few decades ago, 40 to 50 feet apart was deemed a sufficient distance, but today no one plants closer than 50 feet and 60 to 70 feet is considered better. When placed 50 feet apart, 17 trees will set an acre; 60 feet apart takes 12 trees; 66 feet 10 trees; and 70 feet 9



Many dollars worth of pecans curing in South Mississippi

trees per acre. Most of the plantings being made now are 60 feet apart, as this is generally recognized as about the best distance for setting them. This looks like a very few trees to the acre, but by the time they have reached the age of 15 years, one can easily see that this is not one bit too much space. We have seen trees 60 feet apart that at 15 to 18 years of age, had commenced to lap between the rows. The fullest and most complete development of these trees cannot be secured unless the proper distance is given.

One thing of which many folks have had to disabuse their minds, was the belief of some that pecans would stand neglect, that all that was necessary to succeed with them was to set them out and let them fight for their existence with weeds and grass. There was never a more mistaken idea in the world. The improved pecans simply will not yield enough nuts to be profitable when neglected in this manner. A good soil, carefully cultivated, and well fertilized is an absolute necessity.

IT is perfectly permissible to plant crops between the trees while young, and before the roots of the branches take up all the space. As far as possible, however, only those crops that will add to the fertility of the soil by adding nitrogen should be used. Where other crops are grown then it is highly essential that a sufficient amount of fertilizer be added, not only to produce these intercrops but to properly feed the tree. This is where many make a mistake, because it isn't enough to supply fertilizer only in sufficient quantities to produce the truck and other crops growing between the trees. A sufficient amount must be provided to give liberal feeding to both the trees and the intercrop.

In order to produce the best and most profitable pecan orchard, these cultivated crops should not be grown more than four or five years. At this stage of the game give up the ground entirely to the pecan trees, growing, of course, winter and summer cover crops to be turned under, so as to provide an abundance of organic matter for the soil.

The winter cover crop should be turned under reasonably early. This is followed by frequent shallow cultivation and is kept up until late summer if no summer cover crop is grown. If a summer cover crop is grown, then cultivation is continued until late May or early June when the summer cover crop is put in. Cultivation may be done with any convenient kind of implement, which will keep the soil stirred and weeds and grass down.

It matters not how heavy a cover crop is turned under and how fertile the soil may be, it is usually highly desirable to add a large amount of high grade commercial fertilizer early in the spring. This should be applied before growth starts. The best manner of applying it is to scatter it under the spread of the branches and out beyond and cultivate it in. It has been proven that the pecan tree can profitably use very large amounts of commercial fertilizer. A large tree can use 100 to 150 pounds or more and pay a profit thereon. This is not a guess, but has been proven in tests by many practical growers.

EXPERIMENTS and tests performed in various parts of the South show that a complete fertilizer gives better results than one containing only one or two of the ingredients. This seems to be true of all soils, whether rich or poor, clay or sand.

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John Rosenberger's "worn out" soil produced this field of alfalfa clover

Intelligent Farming

By W. H. Byrne

Agronomist, Virginia Agricultural College

ONE of the most outstanding demonstrations of what intelligent farming will accomplish, not only for the farmer in terms of dollars and cents in crop yields, but in the improvement of "worn out" soil, is illustrated by the type of farming being done by Mr. Rosenberger, Evington, Campbell county, Virginia.

By the proper use of crop rotation, lime, legumes, fertilizer, tillage and good seed, Mr. Rosenberger has economically converted a poor land farm into a high yielding and profitable farm.

A field that eight years ago produced less than eight bushels of corn, produced this year 30 bushels per acre of Certified V. P. I. No. 112 wheat. Previous to the wheat this land produced 1,130 pounds of dark tobacco per acre, which was preceded by 2½ tons of hay per acre.

In the picture, County Agent Bruce Anderson and Mr. Rosenberger can be seen inspecting the clover field which yielded 2½ tons per acre. Back of Mr. Rosenberger can be seen a pile of lime which accounts for the successful stands of clover, which he obtained. Mr. Rosenberger applies 2 tons of marl once in every four years. This probably accounts for the fact that he is selling about 25 tons of clover and alfalfa hay this year; while 90 per cent of his neighbors must either buy or not feed any hay.

Mr. Rosenberger used 100 pounds of nitrate of soda, 800

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The Farmer *and* His Land Bank

By *Edwy* B. *Reid*

Washington, D. C.

"MY BANK!" That is the way the city man frequently refers to the bank where he has only a checking account and owns not a cent's worth of stock. His balance also is often so small as to cost the bank more than it makes to carry it. Yet he calls it "My Bank" just the same, and he throws out his chest and lifts his chin a little higher when he says it.

More than 380,000 farmers now refer to the Federal Land Bank as "My Bank" and they are not stretching the truth one penny. They actually own all of the stock in eight of the twelve banks, having bought out the government's investment of approximately $750,000 per bank, made when the institutions were started 10 years ago.

The general public has never fully realized that these Federal Land Banks are not government institutions and that the Treasury Department does not lend public funds to farmers. When the banks were established it was prophesied that the government once owning stock in the banks would always own it. That was not the intent of Congress for it provided specifically for the farmers gradually to become the owners of all the stock of all the banks.

However these banks had to become big institutions before this change would be complete. Now they are frequently the largest farm mortgage concerns in their territory; some have outstanding much more than $100,000,000 in loans. In fact, the 12 Federal Land Banks and the 4,657 local National Farm Loan Associations comprising the system are the greatest farm mortgage institution the world has ever seen.

A glance at the structure of this cooperative farm loan system, the outgrowth of more than a century of cooperative experience in Europe, will show just how the farmers obtained the right to call the Federal Land Banks, "Our Banks." Of the total initial capital of $9,000,000 of the twelve banks, $8,892,130 was subscribed by the government for the purpose of starting them in business. This was back in 1916.

THE law required that borrowers become members of the local association and purchase stock in an amount equal to 5 per cent of their loan. The association, in turn, acquires an equal amount of stock in the Federal Land Banks. When the associations have purchased $750,000 worth of stock in their local bank, the law provided that then 25 per cent of subsequent subscriptions be used to retire the stock originally purchased by the government. These payments have now been completed in the districts covered by the banks located at

(*Turn to page* 43)

The Camera *and the* Calf

By P. M. Farmer

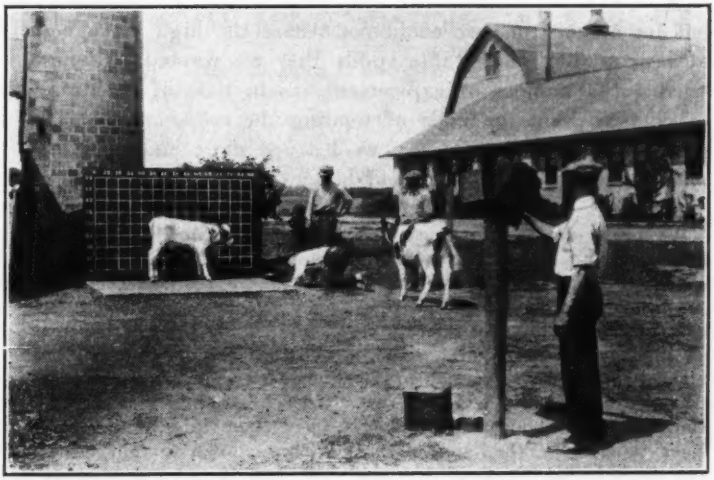
¶ *Recording early indications of future developments*

IN THE past the records of growth of animals have been made by scales and kept in columns of figures. Now there is developing a new method of keeping the growth record of dairy calves which involves the use of the camera in recording changes which are kept on file in the photo album.

The U. S. Department of Agriculture at its dairy farm at Beltsville, Maryland, has been using this method for some time as a means of making comparisons of the rate of growth of young animals and has issued a circular describing the apparatus and the methods.

The accompanying photograph illustrates both methods and equipment very clearly. The calf is placed on a permanent concrete platform just in front of a black background ruled off into six-inch squares. The camera is placed on a post which is set in concrete. By placing the animals carefully before the black board and using a camera of the same size each time, the photographic records are exactly comparable.

This is obviously a better way to gauge the growth of a calf than the use of scales alone. One animal may be increasing in size and bone while another is putting on fat, and yet they may weigh practically the same. By the use of the photographs it is also possible to see where the calf is growing.



These records may read the future of many animals

123.3 *bus. was the yield obtained on unfertilized land*

Reaching Our

By *Rich Lucas*

Mountain View, Missouri

THE irish potato is a crop we had been raising for years, but for a long time we could not secure the high acreage yields of best quality marketable spuds that we wanted, although we tried out a number of experiments as to time of planting, size of cuts to plant, methods of tending the crop, and varieties to plant. Each year, however, we learned more and more how to make spuds give us better and better yields.

We never did build air castles of producing the high acreage yields secured by the Maine, Wisconsin or Idaho growers, but from carefully studying the question, we did have an idea that we could make around the same net profit per acre as they did providing we could grow a good yield of first class tubers. We had a good local market that we figured could utilize a couple of cars, since the merchants ship in each fall and winter about this quantity from the potato sections. If we could only get the right size tubers, we could supply the merchants at just a little less than they paid for the northern grower's yields.

Each season we readily sold all the good potatoes we raised, after saving enough for our own family use, and for seed the coming year, making more and more net profit

The use of 1,000 *lbs. of a well-balanced fertilizer brought* 211.1 *bus.*

Potato Goal

¶ Brains and "grateful" spuds won success for this farmer

each season as we learned more and more how we could produce better irish potatoes.

It was finally after learning there were two prerequisites for assisting us to make maximum yields that we began to make irish potatoes one of our best paying cash crops. The two necessities we found were fertilization and varieties. We learned the importance of variety by trying out an experiment in cooperation with the Bureau of Plant Industry at Washington, when the Green Mountain proved, by far, our best variety for late main crop spuds. We grew only enough Triumphs to supply our market with early potatoes.

We secured our plant food information by continually trying out experiments with fertilizers, finding that potatoes, being gross feeders, responded well only where we fertilized heavily. The following paragraphs, we believe, will prove especially interesting to readers as we give some results we are securing by adequate fertilization since we have learned, over a number of years period now, that heavy fertilization is an absolute necessity to enable us to produce the good acreage yields along with high quality. The table also shows the advisability of growing Green Mountains for our main crop because of their good size and shape along with high producing qualities.

In preparing our potato seed bed, we plowed deeply, then ap-

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The

Hoosier Ten Ton Tomato Club

By F. C. *Gaylord*

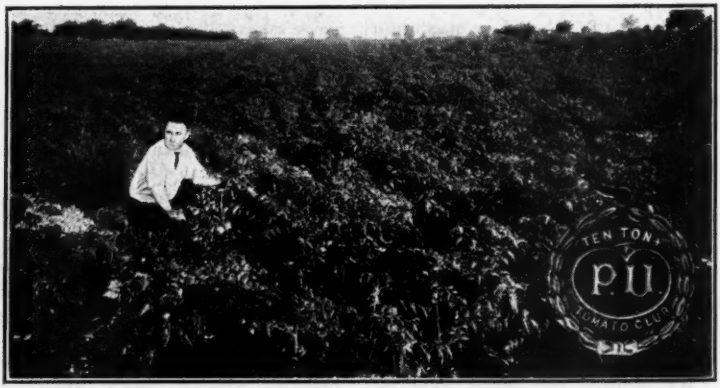
Horticulturist, Purdue University

FIVE hundred and fifty tomato growers have joined the Hoosier Ten Ton Plus Tomato Club, during the past two years, followed the rules and secured an average of almost twice as many tomatoes as their non-club member neighbors. This again proved that good plants, liberal fertilization and good culture are all essential for high yields.

These 550 members planted a little over 3,000 acres from which was harvested some 18,000 tons of red ripe tomatoes. During 1925 their average yield was a little over six tons an acre, as compared with an average yield of four tons for the non-club members. In 1926 the average yield of the club members was over four tons an acre, while the non-club members secured less than three. During the two years more than 100 members passed the 10-ton mark with an average yield of over 12 tons an acre.

Not only did they produce more tomatoes but the quality was such as to bring smiles of satisfaction. "Tomatoes like those received from our club members enable us to eliminate considerable waste, cut the overhead and produce finished products of high quality. The Ten Ton Plus Club has been a means of great help to us," thus a leading canner summed up his approval of this quality club.

The Ten Ton Plus Club was organized in the winter of 1924 and started with 250 members. Growers who join agree to follow the 10



A Hoosier tomato field and the ten ton tomato club medal

rules laid down for growing of real tomatoes in Indiana.

THE first of the 10 rules laid down in the club is that every member must fertilize his entire acreage with 500 pounds of a commercial fertilizer, analyzing 2 per cent nitrogen, 12 per cent phosphoric acid and 6 per cent potash, or apply 8 to 15 loads of manure and 300 pounds of 16 per cent phosphoric acid. Ninety per cent of the growers have used the complete commercial fertilizer during the past two years. Not only have the members used it, but where clubs have pointed the way, non-club members have used it with increased yields and better quality. During 1926 one canning company that has had a club for two years used 26 carloads of this high grade fertilizer on its tomato acreage with excellent results.

In return, all those who secure 10 tons or more are given medals and a bonus of 50 cents a ton for every ton grown on their place for the canning factory This bonus and medal are paid for by the canning factory. Growers who followed the rules secured large increases in yields and quality. The sole aim of the club is to secure large yields per acre, and thus make tomato growing profitable.

Typical of the methods used by growers are those of John Cotty, who secured 15.88 tons an acre in 1925. "I had been growing 8 to 12 acres of tomatoes a year," began Mr. Cotty, "but these had not been very profitable so I decided to join the Ten Ton Plus Tomato Club and follow the rules and see if I could get into the place where profits are found. I had a field of three and one-fiftn acres which was in good condition as it had been in oats five years before and then followed with strawberries and watermelons. Last year part of it was in strawberries and potatoes with about one-fourth an acre in tomatoes. This part I covered with straw four inches thick which was burned off just before breaking the land. Barnyard manure was applied liberally last year. In addition to this, there had been three applications of manure within the last five years.

THE ground was broken May 1, and plowed 10 inches deep. The season was exceedingly dry so the field was rolled, disked and dragged three times, resulting in

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Director G. I. Christie presenting first prize to Harrison Powell

North Carolina

By F. H. Jeter

Editor, North Carolina State College

¶ *The Tar Heel Station is venerable but active*

A VENERABLE age is not alone the sole claim to fame for the North Carolina Agricultural Experiment Station. The station workers are proud that their institution was the first of its kind in the Southern States and the second in America, having been established in 1877 as a part of the State Department of Agriculture. Yet the record of work conducted through these years and the research problems attacked and solved have been additional factors in strengthening this pride.

THE historical record of the North Carolina Experiment Station shows it to have been established on April 19, 1877, as a part of the State Department of Agriculture with temporary headquarters at the University of North Carolina at Chapel Hill. Its purpose then was, first, to protect the farmers of the state from fraudulent fertilizers and to conduct field experiments on the nutrition and growth of plants to determine the best fertilizers for the various crops. Dr. Albert R. Ledoux, a graduate of the University of Goettingen was the first director and began his services in the chemical laboratories of the university with an equipment of "one man, one table and part of one room," according to his first report. On November first, 1880, Dr. Charles W. Dabney of the University of Virginia was made director and continued in the position for seven years when Dr. H. B. Battle succeeded him on September 1, 1887.

On December 8, 1889, the station was formally transferred to the then North Carolina College of Agriculture and Mechanic Arts which had been established at Raleigh and later on July 1, 1897, Dr. W. A. Withers, a chemist at the college was made acting director, in addition to his duties as head of his department.

Dr. Withers remained in charge of the station work until the election of Dr. George T. Winston as President of the college. Dr. Winston was then made director of the experiment station and remained in this position from August 3, 1899, until June 30, 1901, when Dr. B. W. Kilgore was promoted to this place.

DURING the years that the experiment station has been located at the college, its work had been financed cooperatively by funds coming to the college from governmental sources and by the State Department of Agriculture. In 1907, this arrangement was terminated and the college took over control of the station with C. B. Williams becoming director on June 30, 1907. This separation lasted for six years and in 1913, the research work of the college and department was again combined with Director B. W. Kilgore

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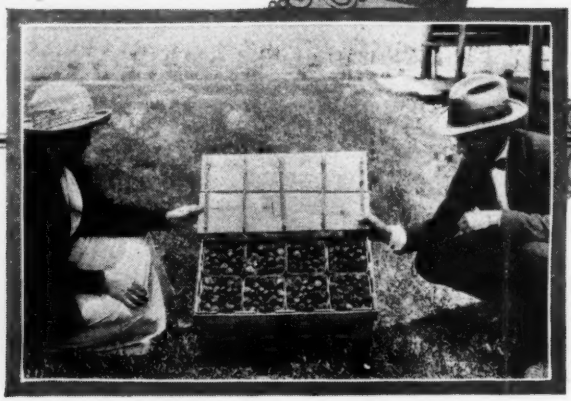
Better Crops' ART GALLERY *of the month*

DR. R. Y. WINTERS

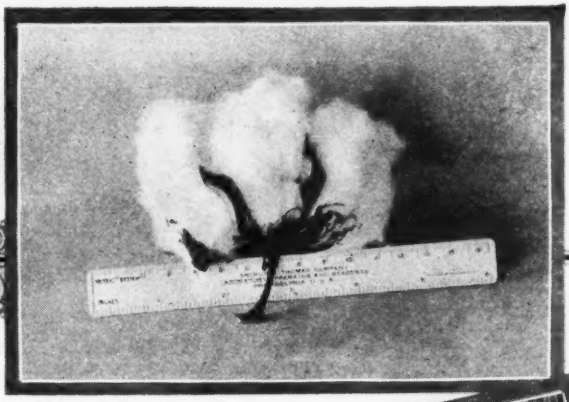
Director of the North Carolina Experimental Station and recognized throughout the nation as an authority on cotton breeding and improvement.

The Mangum terrace was originated in North Carolina.

The poultry plant at the Mountain Station Swannanoa, N. C.



Control of the strawberry leaf scorch has made the growing of this berry a profitable enterprise in North Carolina.



Mexican cotton bred and improved by the N. C. Station

The research staff
N. C. Experiment Station
Raleigh, N. C.

The narcissus bulb field at the Coastal Plain Station, Willard, N. C.
The bulb industry is proving profitable.

The old grist mill at Sudbury, Mass., where Henry Ford has turned back 200 years in restoring Colonial times.

Kathleen Rice, West Point, Ind., and one of J. C. Andrews' best Shropshire lambs.

PEANUTS *Ewing Galloway, N. Y.*

A modern peanut picking machine at work near Suffolk, Va. The pods are separated from the vines and put into bags.

The Indiana Bankers Association studying farm conditions in a 3-day annual meeting at Purdue University.

Laura LaPlante, movie star, with a record orange which she grew.

TURKEYS

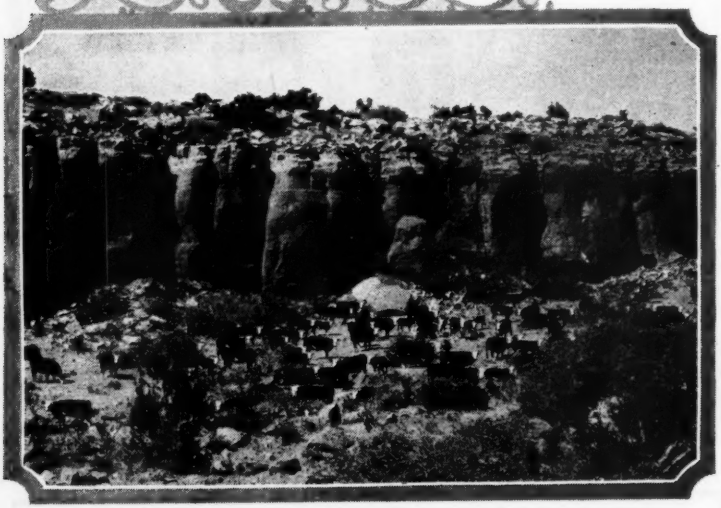
A regular "Turkey trot" at Brady, Texas. Hundreds of the live birds driven through the streets on their way to market.

Dr. A. F. Woods, Director Scientific Work, U. S. D. A., receiving the man who impersonated Johnny Appleseed during the recent national apple week.

Johnny Appleseed was a strange nomad who secured the seeds in the early eighties from cider presses in the East and scattered them through the Mid-West.

John Sherman characterized him as one of the most striking figures the Republic has produced.

"My mission in life," Johnny would say, "is to have the apple and other fruit trees ready for the settlers when they reach the West." He was venerated by the Indians and roamed the wilds unharmed.



Herefords in the picturesque New Mexico country. The "Whitefaces," once a curiosity in this section, have gone far in entirely replacing the long-horn steer of romantic range days.

The Editors Talk

1926

"The first three men of the world were a gardner, a plowman, and a grazier."—Abraham Cowley, 1618-1667.

THE first problem that any man tried to solve was tackled by these three gentlemen. It was how to manage their land. The problem is still with us. It has changed only in form.

1926

First it was a primitive, simple and individual matter. Now it is collective, complex and national. It is true we have not found any universal solution, but we have accomplished a great deal.

We should never forget that a large part of the world's population now has the assurance of sufficient food to maintain life. Famines and food shortages are becoming things of the past. They are largely under control. We, in this country, are particularly fortunate in this respect. We should be thankful. Our standard of living is higher than in any country in the world. Instead of deploring too many acres under the plow, and overproduction and lower prices, we are determined to look forward to the new year with courage and cheerfulness. We have kept up with the land problem thousands of years. We shall in 1927.

With this thought in mind we shall enjoy and profit by the opportunities offered with Christmas, 1926. We hope all our readers will do the same. BETTER CROPS wishes you the Season's greetings and a successful and prosperous New Year.

IS EVERY county agent, in formulating his program for 1927, considering the tax question? How better can he prove his worth to the farmers in his community than by taking a definite stand on this live and important question?

TAXES, 1927

An authoritative statement recently issued by the New York Trust Company should help every reader of BETTER CROPS to decided his stand on local taxation. The facts as presented are:

"Before the war state and local taxation represented a much larger proportion of the total than federal taxation. During the war years, however, the needs of the Federal Government were paramount, and federal taxes were abnormally great, reaching their peak of $5,069,000,000 in 1919. Since then the tendency has been downward. State and local governments apparently seized this opportunity of federal tax reduction to add to their own revenues, and between 1919 and 1925 their tax collections increased 76 per cent, attaining the record figure of $5,100,000,000 in the latter year.

"This revenue, however, was not enough to meet expenditures. In 1925 the disbursements exceeded the tax receipts by $2,300,000,000 as compared with an excess of expenditure for the Federal Government of $350,000,000. To make up this deficit the state and local governments have been borrowing on a steadily and increasing scale.

"Sale of state and municipal bonds amounted to $1,399,638,000 in 1925 as compared with $1,398,953,100 in 1924, the previous record year. Approximately 28 per cent of this was spent on road construction, and 23 per cent for schools and school buildings.

"Since 1919 the borrowings of state and local governments have increased 102 per cent, offsetting the steady decline in federal indebtedness. The total public debt, therefore, now stands at $32,050,000,000 which is very nearly the same as in the peak year of 1919.

"That these loans are continuing in very nearly the same volume is indicated by the fact that the total state and municipal bonds sold during the first five months of this year amounted to $571,895,623 as comparel with $612,184,802 for the same period in 1925 and $546,293,435 in 1924. While the national debt decreases by $500,000,000 a year or more, the state and local debt increases by over a billion. The taxpayer is discovering that the burden which the Federal Government takes off his shoulders is quickly replaced by the state and local administrations."

There is no need to point out the crying need for economy in every agricultural section of our country. Then let every county agent get the situation clearly in hand and point it out to his farmers and every one else with whom he comes in contact. Let him advise against voting for bonds or anything that increases present or future taxes.

More than that, let him start a movement to turn out of office every one responsible for increased taxation or increased state and local indebtedness. Economy starts at home. Let's clean house.

OWING to the abundance of cottonseed meal coming on the fertilizer market there may be a temptation for farmers to use it alone as a cotton fertilizer. It cannot be too strongly urged, however, that the use of cottonseed meal alone for cotton under average conditions, is false economy.

COTTONSEED MEAL

It contains approximately 6 or 7 per cent nitrogen of a relatively slowly available nature, but is not a balanced fertilizer. That is, cottonseed meal does not contain enough phosphoric acid or potash to make a profitable cotton crop.

If cottonseed meal is to be used, it should be procured in a fertilizer that has the right amount of phosphoric acid and potash to produce the most profitable yields.

And as was pointed out by a speaker at the convention of the National Fertilizer Association at Atlanta recently, good yields reduce the cost of production, which is what every cotton grower has to do if he is going to make any profit.

IN a recent address before a group of New York financiers, professional men, and dirt farmers at Hampton Bays, Secretary of Agriculture Wm. M. Jardine took as his leading thought the relation of the business man to the farmer.

THE FARMER AND THE BUSINESS MAN

Analyzing his address, briefly the essential thoughts made, were "We must have a self-supporting America; a greater diversification of crops; cooperative marketing; and a more sympathetic attitude toward agriculture on the part of business men in the cities."

We are told that valuation of farm property in the United States is greater than that of railroads, factories and mineral interests combined.

A careful study of statistics shows the value of farm products exceeds the combined estimated value of the iron and steel mills, chemical industries, meat and packing interests, cotton, wool, and paper mills.

All industries owe their very existence to the products of the soil. The agricultural industry as such is truly fundamental and basic, therefore, to normal growth and development of a nation's industrial enterprises.

We are informed by eminent authorities that our farming policy needs reconstruction or entire replacement. Among those advocating such a step are the Honorable Secretary Jardine and Sam H. Thompson, President of the American Farm Bureau Federation.

Is it any wonder a National Farm Policy is being advocated? We have only to study the past history of American agriculture. From the first, there has existed a predisposition to robbing the soil of its virgin fertility. The Atlantic Seaboard States were the first to fall before such a land policy, then came the exploitation of the fertile western plains area.

In the early days of agriculture in America, land was cheap, the fertility was unimpaired, taxes were low, in fact almost any one could make a comfortable living as a farmer. Today one must possess keener judgment, knowledge of more sciences, and give closer application to business than for any other vocation in the country.

Our politicians and business men are awaking to the seriousness of the farm problem. Everywhere you hear the farm problem discussed and while the solution is not yet a reality, it is coming.

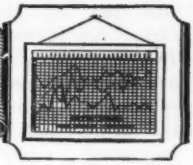
The greatest need of the American Farmer is a permanent National Farm Policy founded on a sound economic basis. Is such a policy possible? Politicians and agricultural experts are agreed that it is—but they say—can the farmer be reached?—will a sound policy in itself be sufficient?

There is every evidence that scientific facts and statistics necessary to solve the farm problem are available—pointing to a solution. The absence of adequate rural leadership, however, is the principal obstacle to a realization of such a policy.

If a National Farm Policy is to be a reality—this in the words of Secretary Jardine—it is high time big business and the farmer bury the hatchet and do some real thinking.

Big Business surely can not afford to neglect the "goose that lays for it golden eggs—wealth."

AGRICULTURAL DEVELOPMENTS



By P. M. Farmer

"Whoo-o-o-ey"

Out in Iowa they are always making a big noise about the hog, which is right and proper since the hog has made Iowa such a big state. This year the great swine feeders day was labeled Whoo-o-o-ey Day and a lot of new things were brought out for the improvement of hog production and feeding. Among the statements made to the waiting swine growers were the following:

In feeding fall pigs during the winter it pays to use a heated waterer. In four months an automatic kerosene-heated waterer increased the profits $1.70 per pig.

It has been demonstrated by the Ames pig specialists that sunshine can be turned to good account. Fall pigs fed outdoors in the sunshine during the winter made $1.02 more each when fed to a weight of 225 pounds than pigs that ate the same feeds indoors.

Dehulling oats for pig feed didn't pay. The oats treated this way increased the gains but the cost of the operation was too great.

A mixture of linseed oil meal, tankage and ground alfalfa was reported to produce more economical gains along with a corn ration than meat meal tankage. The above mixture, made up of 50 pounds of tankage, 25 pounds of oil meal, and 25 pounds of alfalfa meal gave excellent results. But still better results were obtained when the proportion of alfalfa was reduced along toward the end of the feeding period.

A boost was given to crossbred pigs in a test in which crossbred pigs of China and Duroc breeds were compared with purebreds of these breeds. The crossbreds grew larger frames, became fatter and returned about $2.00 more profit per head when they were fed and handled the same way as the purebreds.

Puny Spinach

Spinach with its "shot of iron" for the person who is in particular need of that element, suffers from malnutrition itself. What the spinach plant seems to need is lime, at least in the coastal section of South Carolina. There truckers have lost heavily the past several years because of malnutrition in the spinach fields. At Clemson College they have found the condition was caused by several factors—a lack of humus, a lack of lime, too much fertilizer of the wrong type, and poor drainage. This condition it is said can be controlled by using ground limestone, by using a well-balanced fertilizer and by draining. In that country one or two tons of ground limestone per acre is the dose. One farmer with proper liming and fertilizer grew 22 cars of spinach on 34 acres, whereas the previous season he had grown only 15 cars on 125 acres.

Two-Cylinder Farms

At the University of Illinois they speak of the farmer who depends on corn and oats as his only products as a two-cylinder farmer

and they say that this type of farm has proved unprofitable. This type of farm, it is predicted, will go the same way as the twin cylinder automobile, giving way to the farms that have four to six important sources of income. Economists at the University have found during the agricultural depression that the section in which the farms sold many products such as hogs, dairy products, poultry, eggs, wheat, clover seed, or soybeans, lambs and wool, have earned more money than those sections that depend on corn and oats. But it is recommended that accounts be kept in order to determine whether or not any of the several enterprises on the farm are "dead cylinders." A four-cylinder farm, getting full power out of each cylinder will go farther than a six-cylinder farm with two dead ones.

Cotton Price Helps North

Throughout the northern states farmers are now being urged to take advantage of the big cotton crop by using more cottonseed meal. The Minnesota Agricultural Experiment Station recently issued a bulletin in which the statement is made that cottonseed meal contains the highest amount of protein of any ordinary cattle feed and is especially valuable as a means of balancing a ration in which corn products form a large part. Dr. C. B. Smith, Chief of the Office of Cooperative Extension Work, U. S. Department of Agriculture, says that at the present price it is advantageous for most farmers to feed more cottonseed meal than has been fed in the past and he recommends that many farms on which this feed has never been used may well include it in the ration.

Parlay

At the race tracks the betting fraternity speaks of certain combination bets as "parlays." We are reminded by recent performances in the Vineland, New Jersey, Egg-Laying Contest that a bet on a certain 3 hens might have paid surprising returns. Three of the hens in the 12-months contest, ending October 31, laid 300 eggs or better each. This is a record, at least for the eastern United States. The champion hen, a single combed White Leghorn, laid 308 eggs, a new high record for individual production. This hen's product weighed 38 pounds, or more than 10 times her own weight. The second best was a White Orpington with a record of 301 eggs. This bird was the second of her breed to make the 300-egg mark. The third, a White Leghorn, laid 300 eggs.

Fish and Fowl

Cod liver oil is becoming an important contribution to winter poultry rations on farms where every effort is made to increase the efficiency of hens. The oil is especially needed when the flock is deprived of access to direct sunlight. The poultry specialist of the Ohio State College says that cod liver oil added to the mash decreases mortality and improves the shell of the eggs produced. He also says there is evidence that it improves the hatchability of eggs. Its value, says the expert, lies in aiding the assimilation of minerals but it probably also contains vitamins that are present in green feed.

Cod liver oil is usually fed at the rate of about 1 quart to each 100 pounds of mash. Farms having 200 or more hens may buy it in barrel lots. The light colored product is the kind to get as the dark colored cod liver oil does not contain vitamin A.

Foreign and International Agriculture

The purpose of this department is to help us understand the scientific, practical, and industrial agriculture of other countries and the international developments which result. The editor believes that such knowledge is now of the greatest importance in our agricultural prosperity. Every care is taken to insure accuracy both of facts and their interpretation.

SEEN ABROAD

By G. J. *Callister*

ENGLAND is laying down her acres to grass and building wire fences, and wire fences mean much heart-burning for they play havoc in the hunting field. Riding "straight" a horse can see a hedge, a ditch, or a wooden gate, but a wire fence is a huntsman's idea of treacherousness in the extreme.

With the coal strike and wire fences to contend with, England at work and at play has her troubles.

It is particularly on grain farms in some districts that the arable land is being laid down to grass. The cost of growing wheat is more than the farmer receives. Farm laborer's wages are, of course, higher than before the war and are sustained by government rulings. Many farmers must still pay "tithes" to the Parish Church on every acre they farm. Local and income taxes are high. The farmer solves the problem by reducing the number of men he employs—buys a few rolls of wire, divides his once arable land, buys some stock for fattening, and hopes that the price of cattle will stay up long enough to make a little profit.

More highly specialized farms are doing better. Potatoes and dairying are instances.

Under these circumstances the fertilization of grass land is a live problem. The pioneer pasture work, begun years ago at Cockle Park (Armstrong College, Newcastle) and other work started since then, is coming into its own as a guide to present practices. Very satisfactory results are being obtained with the use of phosphates and potash under proper conditions on pasture lands. The condition of the pasture or meadow and the method of handling is, of course, also important in conjunction with proper fertilizers.

If a farmer lives within 100 miles or so of London then the problem is somewhat different. He may be able to sell his land for bungalows, much to the joy of the land-owner and the distress of the artists, who picture England in the next decade as covered with "real estate improvements." The use of the automobile is of course causing this condition.

The problem of making agricultural land pay in England is a difficult one. Many different solutions are offered but no one solution seems sufficient for the complex situation involved.

While the wise people of Westminster are talking, the English

yeoman farmer as of old is breeding his Shires and his Shorthorns, and wondering what is happening to the country when some people build a wire fence and shoot a fox.

Crossing the North Sea for seven and a quarter hours one lands at the Hook of Holland, a stretch of sandy soil jutting out into the sea. The impression that the Hook of Holland makes on you depends largely on the state of the North Sea for the preceding seven and a quarter hours. Trains run alongside the boat. Thirty minutes traveling over very flat sandy land brings one to Rotterdam and about an hour and a half north to Amsterdam.

It is part of the European coastal plain. It is a region of flowers, pastures, and canals. The cows look very contented, and Holland looks very busy and prosperous. The outstanding features of the Netherlands are intensive farming, in which commercial fertilizers are very successfully used, cooperative effort, cleanliness, and no waste. Absolutely no waste whatever! The corners of every field that may be surrounded by canals are carefully built up with the spade, with the mud and soil alongside the canal and the field squared off, that a few more cabbages may be planted and tended and harvested. The region gives a very gratifying air of peace and quiet. There is little noise. One feels he could live to be 100 years old in such an atmosphere, but on the other hand this may simply be the laziness of a visitor after a journey.

Many of the typical cooperative markets are built at the side and over a narrow canal. Thus the canal runs through the building. The long boat loaded with produce, possibly cabbages, glides in front of the buyers, is sold at auction, and as quietly glides out at the other end. Not a word is spoken. The selling is all done efficiently and quietly by mechanical means. This is conservation of another sort—the conservation of energy. We still have something to learn in this respect.

Traveling east one leaves the polders, the canals and pastures and crosses the higher sandy lands into Germany.

And right here let us get rid of the idea that there is any difficulty in traveling in Europe. Entering Holland or Germany is no more trouble than going from New York to Chicago.

NOTE:—*We hope to publish some interesting photographs of the Netherlands in a later issue.*

* * *

The Long and Short of It

(*From page* 8)

The Commercial Fertilizer, E. B. Ferris, director of the experiment station at Poplarville, told his audience that short time experiments might be misleading. He instanced the fact that results from his experiments for the first few years showed that the soils of the station did not need potash, but as the experiments progressed the evidence of a need of potash became very pronounced.

On a check plot where no fertilizer had been applied for seven years practically no cotton is produced, but alongside where 600 pounds of an 8-4-4 (PNK) fertilizer is used, the land is making not far from a bale to the acre.

Evidence that complete fertilizers are required for cotton, he said, was shown by the prevalence of, and heavy damage from rust and wilt where the fertilizer contained

no potash. When abundant potash was used in the fertilizer there was no sign of rust and very little injury from wilt.

After a visit to the Georgia Coastal Plain Experiment Station located at Tifton, Georgia, Mr. Ferris included these remarks in a public statement to the press:

"As stated, we found the soils at Tifton much more responsive to the use of potassic fertilizers than are those in the same section of Mississippi. Plats there fertilized liberally with acid phosphate and nitrate of soda but without potash and planted to tobacco and cotton, had gone literally to pieces, whereas the same fertilizer here, particularly under cotton, had been giving our most economical increases, especially for the first four or five years.

"On plats at Poplarville this year which have received the same fertilizers for seven successive years, our cotton is doing very poorly as a result of wilt where potash has been left out entirely, but where this potash has been added progressively from 25 up to 75 pounds of actual potash per acre, no wilt has appeared where as much as 50 pounds or more has been added.

"Just what will be the final significance of the work last named remains to be seen as the plant pathologist of the A. & M. College is taking it up and will make a critical laboratory study of the soils from plats here where these differences occur.

"Heretofore we have noted after the third year that cotton on plats without potash rusted badly, while those receiving it in fair amounts per acre were entirely free from rust. The apparent effect of potash in keeping out wilt is something we had not noted at all before 1925, and not particularly until 1926.

"Our visit to Tifton was made especially to study the potash question and we feel will be worth a great deal to us in the conduct of future work with fertilizers on the soils of this section."

* * *

The Farmer and His Land Bank

(*From page 22*)

St. Louis, Louisville, New Orleans, St. Paul, Omaha, Wichita, Houston, and Spokane, so that the member-borrowers of the associations of these districts are now the sole owners of the bank stock. This purchase of stock by the borrowers virtually assures the local association of all the funds it requires to meet the needs of the farmers, since the bank can lend up to 20 times its capital surplus. Thus, about the only limitation is the demand for loans which meet the requirements of the law and the market for bonds from which the money is obtained.

But these farmer-banker-borrowers have done more than purchase the original stock and obtain loans.

The stock in these 12 banks is no longer $9,000,000; it has grown to $56,000,000, and the reserves, surplus, and undivided profits are in excess of $12,000,000. The net earnings from the establishment of the banks to date total more than $40,000,000, of which about $18,000,000 has been distributed as dividends, thereby reducing the interest charge to the borrowers.

Although owned by the farmers, the same careful supervision hy the Federal Farm Loan Bureau of the United States Treasury is maintained as before the government's stock was purchased by them. Each bank is managed by seven

directors, three of whom are chosen by the borrowers, and four named by the Farm Loan Board. The latter are to represent the interests of the public (the bond buyers), and one of them is selected from a group recommended by the borrowers. The board has a force of examiners, appraisers and reviewing appraisers giving constructive supervision with a view to protecting both the investors in the stock as well as the general public which has purchased to date more than $1,256,000,000 of the banks' bonds.

These farmer-borrowers who have taken advantage of the opportunity thus to secure a long-term loan, running from 20 to 40 years, not only get as low a rate of interest as can be obtained elsewhere but frequently a much lower rate. Further, they systematically kill off the mortgage by paying a small installment on the principal each time they pay the interest, annually or semi-annually. Thus they are able to repay the loan out of the profits of farming, are not pushed for heavy payments, do not need to worry about the mortgage becoming due as long as they pay the installments, are not mulched for commissions, bonuses, and the like. If they should have a particularly good year they can make advance payments on the principal or pay off the debt entirely. Thus they enjoy all the privileges of a long-term loan and its low interest rate and none of the annoyances and burdens of a short-term mortgage loan.

There can be no doubt of the popularity of these long-term loans for over half of the loans made are for taking up other mortgages which the borrowers consider less fitted to their needs. Others borrow to pay debt, to purchase land mortgaged, for building and improvements, to purchase livestock, fertilizer, implements and equipment and to pay for irrigation.

The law permits loans up to 50 per cent of the appraised value of the land and 20 per cent of the insurable improvements. Although the maximum loan was increased a few years ago from $10,000 to $25,000, most applications to secretary-treasurers of the local National Farm Loan Associations are for loans under $5,000.

Thus the farmers through their own institutions have aided in sound agricultural development, made available long-term amortized loans at low rates of interest, created a safe investment in Federal Land Bank Bonds and have been a very potent factor in reducing interest rates on farm mortgages everywhere. They are not dishing out "applesauce" when they throw out their chests, lift up their chins and talk about "Our Banks" or "My Bank."

* * *

Intelligent Farming

(*From page* 21)

pounds of 16 per cent acid phosphate, and 100 pounds of muriate of potash under his tobacco and the same amount under his wheat. While this mixture is not what is recommended by the experiment station, and while a different amount of a different analysis fertilizer would have probably given a larger profit, no one can say that Mr. Rosenberger is not doing intelligent farming, and that the increased fertility of his land has not more than doubled the value of his farm. Land which will produce 1,130 pounds of tobacco per acre should yield not less than 50 bushels of corn.

REVIEWS

This section contains a short review of some of the most practical and important bulletins, and lists all recent publications of the United States Department of Agriculture and the State Experiment Stations relating to Soils, Fertilizers, Economics, Crops, Crop Diseases, and Insects. A file of this department of BETTER CROPS would provide a complete index covering all publications from these sources on the particular subjects named.

Fertilizers

For about half a century the Agricultural Experiment Station of Illinois has been studying the soil fertility requirements on many of the soil types of the State of Illinois. They have recently published a very comprehensive report of some 300 pages, Bulletin 273, "The Illinois Soil Experiment Fields," which gives in detail the plan and results of the work on more than 50 experimental fields. This report contains a description of each field, information regarding the cropping systems, and the fertilizers used. For many of the fields, soil and topographic maps are included.

In planning the work two systems of agriculture are recognized —live stock and grain farming. The chief difference is that in the live stock system barnyard manure is used, while no manure is applied for the grain.

In general, the standard plan includes animal manure, plant manures, limestone, phosphate and potash salts. A complete description is given of each of the experimental fields. This is a very useful report because it embodies in one volume data of value regarding long-continued work on the fertility requirements of many important soils.

An interesting and valuable Press Bulletin No. 388, "Fertilizer for Pineapples," by R. W. Ruprecht, has just been received from the University of Florida. Among other results of the experimental work quoted, it is shown that potassium magnesium sulphate gave the best results as a source of potash, and that the formula for most profitable fruiting was ammonia 5 per cent, phosphoric acid 5 per cent, and potash 10 per cent. The bulletin is brief, but should prove an important reference for all growers of pineapples.

The other fertilizer pamphlet which came to hand this month is Extension Bulletin No. 47, "Buying Fertilizers," by O. B. Price of Michigan State College. Mr. Price has divided his valuable information under such sections as "What fertilizers are; what to consider in buying them; use of them; manure vs. fertilizers; a short description of the three principal elements in commercial fertilizers; and how to get most out of their use." The information is very practical, and in its well-planned lay-out is easy for the farmer to use.

Soils

The Decomposition of Toxins by Soil Organisms. Agricultural Experiment Station, Alabama Polytechnic Institute, Bul. 225, June, 1926, Wright A. Gardner.

Crops

A varied assortment of bulletins and subjects found their way to our "Crops" basket during November. Connecticut, in Extension Bulletin 102, "Should the Farmer Fall Plow?" by Professor Henry Dorsey, sets forth a discussion of this ever-present farm problem with a conclusion that fall plowing of heavy turf land is to be commended.

Georgia, in Circular 105, "Irish Potato Culture in Georgia," by R. L. Keener, seeks further to interest her farmers in this diversification crop. In Circular 116, Emory D. Alexander, Field Crop Specialist, sets forth the details of the South Georgia Five-Acre Corn Contest. In Circular 119, the Station gives some very interesting "Agricultural Facts about Georgia."

Maine has issued three good bulletins among which No. 330, "Varieties of Ensilage Corn for Maine," by Karl Sax and Iva M. Burgess, is a valuable bit of research for New England farmers.

The Texas Agricultural Station is continually testing new grasses and forage crops suited to the Gulf Plains of the great State. In Bulletin No. 342, by B. E. Haffner, "Angleton Grass" is fully discussed, with the opinion that it has proven itself one of the best grasses introduced into this region.

Other bulletins include:

"Citrus Culture in Central California," Agricultural Experiment Station, University of California, Bul. 405, August, 1926, Gordon J. Surr and L. D. Batchelor.

"Semi-Centennial of the Connecticut Agricultural Experiment Station," 1875-1925, Bul. 280, July, 1926.

"Lawns in Florida," Press Bul. 389, June, 1926, Agricultural Experiment Station, Gainesville, Fla., W. E. Stokes.

"Hairy Vetch for Soil Improvement," Georgia State College of Agriculture, Athens, Ga., Vol. XV, Cir. 121, September, 1926, Andrew M. Soule.

"Alfalfa for Georgia," Georgia State College of Agriculture, Athens, Ga., Vol. IX, No. 4, Revised Bul. 217, June, 1926, John R. Fain, Paul Tabor.

"Crop Yields from Illinois Soil Experiment Fields in 1925," Agricultural Experiment Station, University of Illinois, Bul. 280, Urbana, Ill., F. C. Bauer.

"Abstracts of Papers Not Included in Bulletins, Finances, Meteorology, Index," Maine Agricultural Experiment Station, Bul. 328, December, 1925.

"Sweet-Corn Breeding Experiments," Maine Agricultural Experiment Station, University of Maine, Orono, Bul. 332, May, 1926, Karl Sax.

"39th Annual Report of the Director of the Pennsylvania Agricultural Experiment Station," State College, Pa., Bul. 204, July, 1926.

"Jujubes in Texas," Texas Agricultural Experiment Station, A. and M. College of Texas, College Station, Texas, Cir. No. 41, July, 1926. B. Lanham.

"Effect of Spacing on the Yield of Cotton," Texas Agricultural Experiment Station, A. and M. College of Texas, Bul. 340, May, 1926, E. B. Reynolds.

"Cottonseed Products as Feed, Fertilizer, and Human Food," Texas Agricultural Experiment Station, A. and M. College of Texas, Bul. 341, June, 1926.

"The Possibilities of Brazil as a Competitor of the United States in Cotton Growing," Texas Agricultural Experiment Station, A. and M. College of Texas, Bul. 345, July, 1926, B. Youngblood.

"Wheat Varieties in Washington," Washington Agricultural Experiment Station, Pullman, Wash., Bul. 207, August, 1926, E. G. Schafer, E. F. Gaines and O. E. Barbee

The American Potato Journal, Vol. III, No. 10, Oct., 1926, Washington, D. C.

Economics

In "Farm Economics," Vol. I, No. 22, Auburn, Ala., by the Polytechnic Institute, in cooperation with the United States Department of Agriculture, there is a splendid discussion on how to reduce the acreage of cotton in Alabama. This is a live topic among the cotton growers in view of the present situation. No doubt there will be many requests for this pamphlet.

In two parts of Bulletin No. 237, Iowa sets forth the "Cost of Living on Iowa Farms." The information is substantiated by a great deal of research, making it of interest to all farm economists as well as the people who name the "Hawkeye" commonwealth as their home.

"Illinois Crop Reporter," October 1, 1926, U. S. D. A., cooperating with Department of Agriculture of Illinois, Cir. 358, A. J. Surratt.

"Standard of Living on Iowa Farms," Agricultural Experiment Station, Iowa State College of Agriculture and Mechanic Arts, Ames, Iowa, Bul. 238, August, 1926, J. F. Thaden.

"Agricultural Situations in the Rice Section, St. Landry Parish and Sugar Cane Section," Division of Agricultural Extension, Louisiana State University and A. and M. College, Extension Cir. 89, Part IV, July, 1926.

"Farm Business Analysis Using Score Card Method," Agricultural Extension Division, North Dakota Agricultural College, Fargo, N. D., Cir. 71, September, 1926, T. S. Thorfinnson.

"The Taxation System of South Carolina," Agricultural Experiment Station, Clemson College, S. C., Bul. 231, September, 1926, W. H. Mills.

"Ownership of Tenant Farms in the United States," U. S. D. A., Department Bul. 1432, Sept., 1926, Howard A. Turner.

Diseases

Maine, noted for its potatoes has published the work of Donald Folsom, E. S. Schultz, and Reiner Bonde, in Bulletin 331, "Potato Degeneration Diseases: Natural Spread and Effect upon Yield." This is a carefully worked out presentation of research problems which should increase future production of the Aristook crop.

Others include:

"The Mosaic Disease of Sweet Potatoes with Special Reference to Its Transmissibility," Agricultural Experiment Station, College of Agriculture, University of Arkansas, Fayetteville, Ark., Bul. 213, August, 1926, H. H. Rosen.

"Apple Spraying and Dusting Experiments in 1925," Maine Agricultural Experiment Station, University of Maine, Orono, Me., Bul. 333, July, 1926, Donald Folsom.

Insects

Kentucky's Bulletin 265, by H. Garman, issues a campaign against "Two Important Enemies of Bluegrass Pastures." This should take well with the farmers of the State which has so long prided itself on its blue grass. The enemies (1) Bluegrass Plant Bug, and (2) The Green Bug are fully described for identification, and treatments for their control are given.

"Dusting Cotton with Calcium Arsenate for Boll Weevil Control," Agricultural Experiment Station, Alabama Polytechnic Institute, Auburn, Ala., Cir. 51, May, 1926, J. M. Robinson.

"Treating Seedbeds for Root-knot Nematodes," Agricultural Experiment Station, University of Florida, Gainesville, Fla., Press Bul. 390, July, 1926, J. R. Watson.

"Control of Mealy Bugs," Agricultural Experiment Station, University of Florida, Press Bul. 392, July, 1926, J. R. Watson.

"The Tobacco Flea-Beetle," Agricultural Experiment Station, University of Kentucky, Bul. 266, March, 1926, H. H. Jewett.

"The Life History and Control of the Pecan Nut Case Bearer," Texas Agricultural Experiment Station, A. and M. College of Texas, College Station, Texas, Bul. 328, April, 1926, S. W. Bilsing.

* * *

North Carolina

(*From page 28*)

of the State station becoming director of all the research activities.

This plan continued until 1924, when the college, under the leadership of President E. C. Brooks took charge of all educational work in agriculture in the state, and the research and extension activities became a part of the School of Agriculture. In June, 1925, Dr. B. W. Kilgore resigned as dean and director in the School of Agriculture and was succeeded by Dr. R. Y. Winters as director. I. O. Schaub, head of the extension service, was made dean of the School of Agriculture.

From the time of its organization in 1877, until the summer of 1881, the station was located at Chapel Hill. It was then transferred to Raleigh where it occupied quarters in the old State Agricultural building. During this period, the institution had grown in resources and man power and in April, 1886, the first farm was added to carry on experimental work in the field. This land is now a part of the college farm and is known as the Central Station farm.

Since one of the main functions of the station was to find out the plant food needs of the various soils and to advise farmers about fertilizers and plant growth, it was soon seen that the station must have branch stations on the main soil types. North Carolina is naturally divided into three regions of the mountain, piedmont and coastal plain areas with all the gradations of soil and climate occurring from such a division.

Therefore, in 1902, the Upper Coastal Plain station was established near Rocky Mount in Edgecombe county. This was followed in 1903 by the establishment of the Piedmont Branch station near Statesville. Two years later, in 1905, the Coastal Plain station was established near Willard in Pender county; in 1908, the Mountain Branch station was established near Swannanoa in Buncombe county; in 1913, the Tobacco station was established near Oxford in Granville county and the Blackland station was established near Wenona in Washington county; in 1922, a Swine Research station was added near Raleigh to study the soft pork problem and other matters pertaining to the feeding and growing of hogs in North Carolina.

IT might be said somewhat truthfully that the scientists of the North Carolina Experiment Station have not distinguished themselves by any great discoveries in the field of real science. Their efforts, it appears from the record, have been more effective in trying to find out those facts of practical, every-day application to the needs of the farmers than in delving into scientific mysteries which are of greater interest to professional investigators. In rendering practical service, however, no other group of investigators has exceeded the workers of North Carolina. Nor does this mean that no work has been done in the field of pure science. It does mean that the greatest results have been obtained in finding out practical facts of value to the farmers of the state.

In this field of practical and applied science, the station has been a leader. It has striven to keep just ahead of the demands made upon it for information and to be ready when the time comes to say definitely what it considers the best practice to follow.

Through years of research in breeding and testing varieties of cotton, about 60 per cent of the cotton acreage is now planted to two varieties. These are the Mexican and Cleveland Big Boll cottons and this work alone has added about 100 pounds of lint cotton per acre to those acres planted to the varieties. It is estimated that this work in 1925 added about $23,000,000 to the value of the state's cotton crop.

A further study of some major activities would show that the North Carolina Experiment Station gave the nation the soybean. Agronomy workers spent years in testing and studying the soybean and in making recommendations as to its general use in the state. The work done popularized this legume, caused it to supersede the old time cowpea of great southern popularity and to extend the acreage planted to summer legumes in the United States.

IN tobacco, the station was the first to study some of the destructive diseases of this weed. Methods of treating "wildfire" and the dreaded wilt were first originated in North Carolina. These were followed by additional research in overcoming "sand drown," a deficiency disease, and the resulting use of magnesium either in limestone or in potash fertilizers. This magnesium study alone has added millions of dollars to the value of the tobacco crop and would in itself justify the existence of the station today. Methods of curing tobacco, of treating tobacco seed beds for leaf spot diseases, of growing the crop and of ascertaining the best varieties have been developed by the station and used by farmers with good effect.

It was expressly stated when the North Carolina station was founded that it should give close attention to soil fertility problems. This idea has been followed down through the years and it is doubtful if another station in the United States has as much data about the plant food needs for various crops on the different types of soil. About 75 per cent of the state has been surveyed in soil survey work and careful field experiments have been conducted on all the main soil types. These data, together with the available information about the soils, enable agronomy workers to give sound recommendations as to kinds and amounts of fertilizers to use. North Carolina uses more fertilizers and uses them more successfully and with correspondingly greater increases in crop yields than any other state in the South.

AT the present time, the station has 178 different projects under way. Some of these are conducted on the branch farms and some at the central station laboratories. At the Upper Coastal Plain station, for instance, the workers are studying boll weevil control, soil fertility, seed improvement, swine feeding, cropping systems and horticultural problems.

At the Piedmont station, the studies are concerned with cotton, corn, small grains, pastures, hay crops, swine, sheep, fruits and soil fertility.

At the Coastal Plain station near Willard, studies are being made with Muscadine grapes, dairying, poultry, fruits, vegetables, pastures, grains, hay crops, corn and flowering bulbs. This bulb industry is something new, having been fostered by the embargo on bulbs from Holland. The station now has one acre planted to many different varieties at a cost of $1,400 for seed bulbs alone. The acre is returning a profit of $300 for flowers and the first mature bulbs were harvested in the summer of 1926. Here also is the largest rotundifolia vineyard, devoted to scientific study, in the United States.

At the Mountain station, the studies deal with dairying, swine, poultry, fruits, truck crops, pastures, crop rotations and soil fertility. Curing apples in air cooled storage houses was first worked out here successfully.

At the Tobacco station near Oxford, much of the work is done in cooperation with the Federal Gov-

North Carolina experimented and gave the nation the soybean

ernment. Studies are being made in fertilizer tests, rotation systems for tobacco, tobacco after cowpeas, permanent tobacco seed beds, potash and lime tests, influence of continuous cropping, legumes, fertilizer and general crop effects.

At the Blackland station, the tests are concerned with drainage, corn, soybeans, pastures, small grains, swine, fertilizers and lime studies. This station is located on the mucklands in the Carolina tidewater region and the information derived is proving of vast benefit in reclaiming for profitable farming use, many thousands of acres of swamp land in this territory.

The agronomy work of the station has been largely in charge of C. B. Williams as chief of the department. Mr. Williams published his first agronomy bulletin in 1903, when he took charge of the department and since that time he has published either alone or in collaboration with his co-workers, 56 scientific and general publications. These publications are in addition to those prepared by members of the department and in which Mr. Williams did not participate.

AT the present time, the cotton farmer of North Carolina is using about 500 pounds of fertilizer per acre under his crop. Results secured by the department of agronomy indicate that from 800 to 1,200 pounds could be used advantageously on some soils. The tobacco farmer is using from 600 to 800 pounds of fertilizer, while tests show that from 1,000 to 1,500 pounds could be used effectively. Because of the work of the station, the average use of fertilizers per acre has gradually increased with resulting profits in crop yields. The quality of the crops has also increased correspondingly.

North Carolina is known as the best diversified state in the South. Large areas are devoted to small grains, clovers and legumes. The dairy industry has increased rapidly in the piedmont region. There are now 16 creameries operating in the state and these turn out nearly 2,000,000 pounds of butter each year. The essentials of creamery management and buttermaking have been studied at the station to aid in this work. In the mountains is an area devoted to late truck crops and to apple growing. Here the station has developed varieties of seed irish potatoes which give bigger yields in the early crop of coastal Carolina than do imported seed from other sections.

In the Sandhills section, a great fruit industry is growing. Peaches, dewberries, and grapes grow well here and the demands for information in handling these new crops are being met at the station. In the central and upper coastal section of the state is the great general crop producing area with corn, cotton and tobacco as the three main crops. The station is ready to give the latest and best facts about these crops. The peanut and soybean thrive farther east along with the early truck crops of the coastal section. All of this great system of diversified farming requires particular and careful attention. Insofar as present funds permit, the station is still pointing the way and meeting the demands for information. Each year new requests for research work are received which only serve to show the confidence of the farmers in their hired staff.

It was not long ago that North Carolina was recovering from the effects of a disastrous war followed by a period of misrule and poverty. But for over a decade now, blessed with wise leaders and strong agricultural students, the state has gradually emerged to a

very proud position. In 1919, it ranked fourth in value of the 22 leading crops as compared with all the states of the nation. Last year it ranked seventh with a lower rank received because of low prices for cotton and tobacco. For the three money crops of cotton, corn and tobacco, farmers received approximately $223,467,000. The value of all crops was $318,661,000.

But new problems are now confronting Tarheel farmers because of the great increase in land values and the increasing industrial and commercial expansion. The state, however, appears to be building on a sound foundation and the careful investigations of past years are pointing the way to future success. The farmers of the State are rapidly adopting new business practices and are cooperating with their business friends and agricultural leaders to find the most helpful solution of the many perplexing problems which continue to loom before them.

* * *

Hoosier Ten Ton Tomato Club

(From page 26)

the soil being practically a dust mulch down at least six inches. Just before planting I applied 450 pounds of 44 per cent acid phosphate, broadcast with a two-horse drill.

"These plants were stalky and well grown from the Indiana strain Greater Baltimore. I set them by hand 4 ft. by 4 ft. in check rows, setting them deep and wetting in each plant. I had started setting on May 22, but frost destroyed them on the 23d, and so I waited until May 27 to set the field. After setting I cultivated them five times with regular two-horse cultivator, at first deep and then shallow. Two cultivations with one-horse cultivator completed the work and left the field practically free from weeds.

"My expenses on three and one-fifth acres were $150.00. After deducting this I had $586.00 left which made it a real profitable crop this year. By decreasing the acreage and giving better culture and liberal fertilizing, as required in the Ten Ton Plus Tomato Club, I was able to secure more tomatoes on the three and one-fifth acres than I previously obtained on 10 acres."

Harrison Powell was high man in 1926 with a yield of 13.8 tons to the acre. This yield was secured in spite of both drought and flood periods, which caused enormous damages to the Indiana tomato crop. Powell's story of success is similar to that of Cotty's, who carried off the $200 watch in 1925. It's a story of using good plants well grown, set early on thoroughly pulverized soil and liberally fertilized. Powell used 800 pounds of commercial fertilizer one half of 2-12-6 and the other half 0-10-10 analysis. Keeping the weeds down and frequent level shallow cultivations gave the plants a chance and with an abundance of available plant food the plants bore remarkable crops of quality fruit.

Experiments like the above were common with members of the club who surprised themselves as well as the canners, with both the yields and quality of the tomatoes grown. As a result of this canner-grower cooperation a more friendly relationship has sprung up which will mean much in the development of tomato production. New clubs are being formed and indications point to a great expansion of the club idea in 1927, not only in Indiana but elsewhere.

Reaching Our Potato Goal

(*From page 25*)

plied broadcast a thousand pounds of 4-7-10 fertilizer per acre on March 27. After this, we worked down our seed bed with disc and drag harrow, which at the same time worked the plant food thoroughly through the soil.

Following, we marked out the rows three and one-half feet apart, dropped the seed 18 inches apart, and covered. We used large cuts necessitating around 15 bushels per acre, as we have found the use of large cuts or even whole tubers pays us well over cutting to small seed. Our potatoes were planted on some of our best land, a reddish-black clay loam which contained quite a good supply of humus.

We began cultivating, April 30, with a small shovel cultivator. Believing we could well utilize more nitrogen for our potato crop, but to learn for sure, May 13, we applied 140 pounds nitrate of soda per acre, after leaving a small portion without any fertilizer at all to check on, for we wanted to know without doubt for future use, just how much our fertilization practice paid.

During the season we cultivated five times in all and hoed once. Potato bugs showed up, so June 1, we put our power sprayer into use and this ended their invasion, since very few bugs showed after our spraying. We used two pounds dry lead arsenate in 50 gallons of water, or 10 pounds to our sprayer full.

It was not until after harvest, however, that we learned just how we were monetarily progressing. We found the following results which show just what profit we secured by our fertilization and we can't help but believe many readers of this journal will be interested. By using the same variety and fertilization along with cultural treatment they should be able to duplicate our returns, which are:

Variety and treatment	Yield in Bushels per acre
Triumph—unfertilized	56.30
Triumph—fertilized	131.17
Green Mountain—	
unfertilized	123.31
fertilized	220.67

The two illustrations are comparison pictures we made after sacking the same amount of average row of potatoes hand dug from the fertilized plot, as well as of those not fertilized. While they vividly portray the difference the plant food made, we would like to present the table below which shows the net profit per acre made by fertilization, and selling the potatoes to our home merchants at two cents a pound:

	Value per acre	Velvet per acre
Triumph—		
unfertilized	$67.56	
fertilized	157.40	$89.84
Green Mountain—		
unfertilized	147.97	
fertilized	264.80	116.83

We planned our fertilization knowing the soil to be deficient in both nitrogen and phosphoric acid, while we knew that Irish potatoes were greedy feeders on potash. Thus we used a mixture analyzing 4-7-10, not only securing very satisfactory yields per acre, but also growing some excellent, marketable tubers quite free from disease. We easily disposed of them and they netted more money per acre than any of the other crops. Is there any wonder that we are enthusiastic about this crop, and are so willing to fertilize heavily with all three necessary elements?

The Business of Horticulture

(*From page 20*)

squarely on the ground and refusing to be excited and wrought up by wild-eyed agitators. We should especially avoid the calamity howler.

The propaganda which is most dangerous to us is that which is whispered from one to another. It is easy to combat that which is printed. It is, therefore, the duty of every good citizen to be on his guard and at his post of duty in order to swat dangerous, vicious propaganda which would destroy the very vitals of our institutions.

Progress in horticulture is made because of discontent. The right discontent should be cultivated. It is commendable. Students attend the College of Agriculture because of discontent. Farmers belong to the Farm Bureau on account of discontent. Fruit, vegetable, and truck producers attend meetings and expositions because of discontent. They are not satisfied with present methods and practices. It is the desire to better their conditions. Rightly directed discontent makes for growth in the individual and national life. The discontent must, however, spring from the proper motive or it will be destructive.

In spite of the low prices of farm products and the difficulty the farmers and fruit growers have had in making both ends meet, there seems to be better days ahead. Producers are thinking as they never have before. They are making their jobs worth while. They see that it takes brains, training, experience, and education to raise successfully, apples, grapes, strawberries, tomatoes, watermelons, and potatoes.

WE might compare the life of the fruit grower of today with that of the fruit grower 40 or 50 years ago. The grower of earlier days produced crops and livestock almost solely for the bare necessities of life, food and clothing. He carried on the farm orchard and vineyard operations as his father had done before him with but little thought of improving his methods. The "why" of farming was not generally considered seriously. Methods, operations, floods, droughts, ravages of insects, and plant diseases, and

Here cabbage has been planted between the rows of two year old apple trees as an intercrop

matter of course and serious efforts were not generally made to prevent, protect, or improve conditions.

The production of crops in the old way, therefore, tended to discourage and dishearten the individual. The opportunity to use one's reasoning power was not as great as it is today. In fact head work counted for very little. Very few books and papers were available. The "business of horticulture" was looked upon by many as an unworthy calling. The tendency was for many bright intelligent, industrious young men to shun or avoid the occupation of fruit, vegetable, and truck farming.

We are making progress in another direction. The horticulturists of today—unlike those of the past—have the advantage of the rural telephone, the daily mail by rural free delivery, the radio, good roads, motor cars, and modern conveniences in the home. In addition to these he has bulletins, circulars, periodicals and newspapers which keep him posted upon all the various phases of horticulture. He also has assistance and advice from a trained county agent and specialists from the College of Agriculture. He does not do things any more on the hit-and-miss basis. All his orchard operations are definitely planned and outlined. His crop rotations have been worked out. A plan of permanent soil fertility has been adopted. Arrangements have been made for the control of insect pests and plant diseases by providing insecticides, fungicides, spraying equipment and the like. The value of pruning, fertilizing and proper varieties are also given due consideration.

The "business of horticulture" demands that we face about and take advantage of our opportunities, opportunities which the horticulturists of no other age have ever known. When we do this, success will be assured and cultural operations will be placed upon practical, scientific and business principles.

* * *

Unbending Backs in Farming

(*From page* 16)

not forthcoming to pressure milking.

Instead the suction principle is generally used at the present time. In the suction mechanical milker, the machine takes the milk from the teat in a manner that is an approximate duplication of the action of the calf's mouth on the teat. The sucking calf applies suction to the teat at intervals, these intervals or pulsations being produced by the calf's breathing and swallowing. In swallowing, the calf's tongue is forced towards the roof of the mouth, which exerts pressure on the teat from the end first, toward the udder. Present day manufacturers have sought to reproduce, as near as possible, the pulsations and massaging action of the calf's tongue.

What is the reason for the long continued interest in milking machines? The answer lies in the fact that a large proportion of the gross yearly income on many farms is derived from the dairy herd. By means of study upon representative farms, facts have been obtained to prove that as much or even more than one-fourth of the cost of milk production may come from the labor required in the care of the dairy herd. Thus the high cost of production and the shortage of labor make it evident why mechanical milkers have received

MILKING machines make it possible on the dairy farm with 25 to 40 cows for the field men to be relieved of the early morning and late night milking. One or two men can handle the dairy work and the milking without calling in field help. This takes the friction out of the dairy farm, enables the teams and tractors to put in a full day without the men meeting themselves going to bed when they are getting up to milk in the morning.
—DAIRYMAN DOUGAN.

so much attention in dairy regions.

Rather extensive tests have been made at experiment stations and on well developed dairy farms to study the principles and to learn the possibilities of milking machines. In 1905, the University of Wisconsin conducted a carefully outlined experiment for a period of twenty months. The herd was divided so that one lot was machine-milked while the other lot was hand-milked in order that a comparison of the results of the two methods might be obtained. The Wisconsin experiment was held under the able direction of the late F. W. Wall, George C. Humphrey, head of the Animal Husbandry department, Gustave H. Benkendorf, present manager of a California farmers' creamery company, Roy T. Harris, supervisor of dairy testing, and Dr. A. S. Alexander, well known veterinarian. Oscar Erf, now professor of animal husbandry at the Ohio State University, when working with the Kansas Experiment Station Farm, conducted a series of tests, reaching conclusions similar to those of the Wisconsin Station.

The results of the various experiments indicated that machine milking, done under capable supervision, compared favorably with hand milking in all respects and doubtless was superior to that done on many farms.

The effectiveness of the milking machine was found to depend largely upon the operator's attentiveness to milking, to the management of the cows, and to the care taken for the provision of a clean product and thorough milking.

By means of the experiments, it was proven that cows did not dry off any faster under the mechanical milking process than by hand milking, providing that the operator obeyed the directions accurately. Careful machine milking, followed by hand stripping, seemed to reduce to a minimum the danger of thickening teats and congested udders. If the milking machine operators used care in having the vacuum properly adjusted, the inflations working at the right speed, no serious difficulty was encountered with the cow's teats and udders, nor did the milk flow vary to any great degree.

On one Wisconsin dairy farm each cow's milk was weighed at every milking for several years before and after the purchase of a milking machine. According to the records, each cow produced two pounds more milk every day after the installation of the milking machine. This was accounted for on the basis that an increased production results from regular milkings which is more easily possible by mechanical milking.

IN general, the time and money economy of a milking machine varies with the size of the herd to the work on the farm, and the seasonal conditions that influence the labor supply or time available for milking. When the herd is so large that the time involved in the milking process and in the care of the cows assumes large proportions, the purchase of a milking machine is quite justified.

The cream and milk checks, representing not only a stable but a cash income, are assuming an increasingly prominent place in many farmers' income. Increasing milk production necessarily increases the overhead expenses, hired help particularly. Not only is it true that the milking machine makes larger milk production possible, but it does so with less trouble and expense.

One of the important factors in favor of the milking machine lies in the possibility of the field men being relieved of the early morning and late night milking where the herd is above 25 in number. The time thus saved may be profitably spent in the field. Even the saving of one hour a day means much during the short planting and harvesting season when every minute counts.

Experience and experiment would seem to prove that in dairies where milk is cared for under ideal conditions, milking machines have little influence upon the cleanliness of the product and the bacteria count, but in ordinary dairies and in less than normal farm milk rooms, a good machine that is kept clean produces better and cleaner milk than is possible by hand milking. Under careless milking conditions, all too often found on many farms, the open pails permit the milk to be exposed to dirt of various kinds and sources. These foreign substances make rapid increase of bacteria possible, which in turn causes the milk to become sour in a short time.

Condensed milk factories occasionally test the cleanliness of their patrons' milk by running the milk through cotton fluff; some of the cotton will remain white and clean, some will be but slightly speckled, others will be filled with straw, while still others will appear to have been swished in the gutter. The pollution and exposure of milk may be reduced with the milking machine, properly cleaned.

* * *

The South Grows Our Xmas Pecans

(*From page 20*)

On sandy soils, a fertilizer analyzing 8 to 10 per cent phosphoric acid, 4 to 6 per cent nitrogen and 4 to 5 per cent potash has proven, as a general rule, to be the most profitable. An 8-4-4 or a 10-6-5 will be all right. Probably the 8-4-4 is more generally used than any other analysis. Trees nine to twelve years old should receive not less than 20 to 25 pounds each and it is altogether likely that they will pay a good profit on 50 to 75 pounds of fertilizer, provided they are in a healthy, vigorous, growing condition. Those four to five years old should have eight to ten pounds, and those six to eight, from 12 to 20 pounds. A rule that many pecan growers are following is to square the diameter of the tree in inches and give as many pounds of fertilizer as this figures. For instance if a tree is six inches in diameter at the base, square it, which will give 36; then apply 36 pounds of fertilizer. If it is 12 inches at the base, give 144 pounds. It is admitted that this is heavy fertilization, but some of the leading pecan growers have found it to be a good, safe, general rule to follow and that pecan trees will pay a profit on this amount of fertilizer.

Like many other crops, it has been found that the pecan will use profitably a great deal more plant food than was formerly thought. For this reason, an ever-increasing

amount is being used by the most progressive pecan growers and a ton to the acre is not at all an excessive amount for large bearing trees.

The pecan needs comparatively little pruning, and the pruning consists almost entirely of removing surplus branches or those that are injured or diseased in any way. When setting the trees, some make a practice of heading them back four or five feet above the ground; others do not head back closer than seven feet. In the semi-arid West however it is usually best to head back rather low, say 12 to 24 inches above the surface of the ground.

Scab is the most serious disease with which the pecan grower must contend. Reasonably good results in controlling this disease however have been made possible by giving three sprayings with bordeaux mixture. The first of these sprayings is usually given soon after the nuts are set. The second follows three or four weeks later and a third one three or four weeks later.

The most troublesome insect with which the pecan grower has to contend is the nut case bearer. This pest attacks the immature nut and destroys it, thus greatly reducing the crop. Fortunately this pest can be reasonably well controlled by practicing the proper orchard management of cleaning up all diseased twigs and other debris in the fall and burning them, and by spraying with arsenate of lead in the spring. This spring spraying may be combined with that for pecan scab, usually three sprayings being sufficient to give a reasonable degree of control of this pest.

The principal trouble in spraying pecans is caused by the great height to which the tree grows, which necessitates very high powered spraying outfits, but it is pretty generally conceded now to be a fact that spraying to control the pecan scab and the nut case bearer is practically essential. It is also true that by spraying with this combination insecticide-fungicide for the control of this insect pest and fungous disease, other fungous diseases and insect pests will be largely controlled.

Without question, pecan growing in the South is profitable. It is not a get-rich-quick scheme nor a proposition where the money can be gotten out quickly, but for those who are willing to put in some money for a long time investment, it is unquestionably a safe and profitable business, if properly handled.

A cover crop of Melilotus Indica in a Louisiana pecan orchard

Campaigning for Fertilizers

(*From page* 13)

data to supplement it. It was not the purpose of the campaign to lay down hard and fast rules of soil fertility for the farmer to follow. Such a procedure would defeat the purpose of the campaign. The main purpose was to develop in the minds of the farmer that soil fertility was their first consideration in any system of farming and that a more systematic system must be followed if farming is to survive.

Recommendations were given, modified to suit the individual farmer's need. It was clearly pointed out that the farmer's problems were the same fundamentally but the method to follow in performing these practices would vary according to the soil type, the system of farming, climatic conditions, markets and the individual farmer. He was also impressed with the fact that agriculture is continually changing and that he must be alert to the changes. A practice followed 10 years ago may no longer be adaptable and also that at the end of the next decade the present practices may not be the best even though the fundamentals are the same. We encouraged the farmers to think more about their individual problems.

The response from the dealers and manufacturers has been good. The trend toward higher analysis fertilizer is moving more rapidly and the farmer is more nearly using goods adapted to his needs.

Campaigns of this sort are not new. Other states have put on fertilizer campaigns, possibly in different ways and the success has probably varied according to the method of attack. We do not believe that the method employed in Michigan is the only one to be used, that it would work in all states, or that it has not been used in other states. What we are interested in, is that it is working here. Local conditions will vary so widely that the causes for lack of interest, which may exist in one place, may be entirely different somewhere else. On the other hand there is some method whereby they may be reached. Many of the farmers of Michigan are ready to accept the information relative to fertilizers. Requests come in constantly for information on how to buy fertilizers and how to use them. Those not so vitally interested are reached through timely press articles which convey information, yet leave a desire to attend the meetings for more information.

The Campaign is gathering momentum. Proper direction will keep it moving. Fifteen counties are scheduled for the 1926-27 season, and others have asked for it.

* * *

The Case for Fall Fertilizers

(*from page* 17)

oranges removes 13.4 pounds of phosphoric acid and 55.6 pounds of potash per acre. We are all aware that there are large amounts of these materials in the soil. But we are also informed that they are very slowly available to the tree. The theory and practice follow that the way of assuring good sound fruit and wood is to supply sufficient amounts of potash and phosphates that we know to be available.

Many growers feel that this

practice has paid them. It is supposed that phosphates, for instance, improve the texture and quality of the fruit. It is also said to influence the maturity of fruiting wood so that the possibility is greater of setting a good crop the following spring. As for potash, it is commonly believed that it enters into the formation of sugars in the fruit and also in the hardening of the wood structure of the branches of the tree. Both of these materials therefore, are balance wheels for nitrogen. Nitrogen makes rank growth and these other materials help to mature it. When an excess of nitrogen over other materials is present the tree growth is likely to be weak and subject to decay and injury in shipping. But the other two of the "Big Three" plant foods tend to correct these difficulties. The tree can take only the plant foods available to it. Our job in fertilizing is to feed it the foods it needs, in available form and at the time it needs them. There are several ways of feeding phosphates and potash to the tree. There are several mixed fertilizers for fall application that contain very small amounts of nitrogen and large amounts of phosphates and potash. These complete fall fertilizers have the advantage of requiring but one application to furnish all the plant food necessary. Usually from one and one-half to two and one-half per cent of nitrogen is the maximum in these mixtures and from five to ten per cent of phosphates and potash. In applying samples there is but little choice. Sulphate of potash, 48 to 49 per cent potash, and muriate of potash, 50 to 55 per cent of potash, are the most common forms of potash fertilizers. Superphosphate, 17.5 per cent available phosphoric acid, and bone meal, 1 to 2.5 per cent nitrogen and 20-30 per cent phosphoric acid, are the most common phosphate fertilizers. Bone meal is considered a rather slowly available material, but nevertheless, seems to be very favorably considered.

* * *

A New Book to Read

MANY valuable contributions have been made in recent years to our knowledge of soils, soil management and crop fertilization. Many writers have treated these subjects in one phase or another, and their books have been of great value to the student and investigator.

Outstanding among the early writers was the late Edward B. Voorhees. Though there have been enormous changes in fertilizer recommendations since his day, his concept of the future of fertilizers in crop production, as expressed in his book, "Fertilizers," was so clear that much that he wrote 30 years ago is as fundamental to proper use of fertilizers today as it was then.

In this the second revised edition, just off the press, we have all that Voorhees gave brought up to date in excellent style by Sidney B. Haskell, Director, Massachusetts Agricultural Experiment Station.

"Fertilizers" as it now stands, represents truly the most up-to-date treatise on the use of fertilizers available.

* * *

A hen is the only living critter that can sit still and produce dividends.—*Northwestern Confectioner.*

Young Folks and *Trees*

By I. T. Bode

Extension Forester, Iowa

HOW many common trees in the woodlands do you know? What kind of wood will make the best "shinny-stick"? Can you cook beef-steak over a fire without a frying pan and without smoking your eyes out? How old is a tree? What are "good-manners" in the out-of-doors? How can you use woodlands? What are they worth to the farm?

Boys and girls in Iowa are learning answers to some of these problems through forestry schools being conducted in their camps. From two schools held in the summer of 1923, to 25 schools held during the past summer is the record of growth made in this work. More than 1,400 boys and girls and over 100 adult leaders took the work this year, which was given in camps from Clinton, Dallas, Polk, Marshall, Franklin, Muscatine, Wapello, Pottawattamie, Plymouth, Sioux, Black Hawk, and Warren counties.

These schools are being conducted by the Forestry Extension Service in cooperation with the Farm Bureau, Boy Scouts, Y. M. C. A., 4-H clubs and other similar organizations. Not a small part of the work is being done in 4-H club girls' camps, and the girls are giving the boys a "run for their money" in interest in the work and things accomplished.

The work consists of a series of four lessons, usually given over a period of two days and fitting in with other camp activities. The lessons are field studies and hikes. Lesson one covers identification of common trees of the locality, usually in the vicinity of camp. Lesson two deals with use of some of the species both in the woods and out, and with caring for oneself when using the woods for recreation or other purposes. Lesson three continues from lesson two and takes up in addition, the building of camp fires, and the need for care with fires in the woods. Lesson four covers Forest Influences, such as wild life dependent upon the wood for its existence, the effect of forests upon stream flow and ground water, the economic importance of forests to the nation, and other phases.

The surprising thing has been the interest shown by boys and girls alike, especially in the more technical phases, and the use that has been made of the information given at these schools in activities of organization during the remainder of the year.

The lessons are so planned that there is a progression in the work. Those who have had the first studies one year can take up more advanced work the following year. The work is all given under the supervision of the Forestry Extension Service.

* * *

Correction

We have just been informed that after an error in addition of scores was discovered, the individual honors in junior livestock judging at the National Dairy Show were accorded Gertrude Kaiser of Iowa. On page 33 of the November issue, BETTER CROPS ran a picture of Erwin Klusmann of North Dakota as winner of the highest individual honors. We are glad to be notified of the correction, and to print it herewith.

* * *

Man is the only animal that can be skinned more than once.

Specialism

(*From page 4*)

plainly on the consciousness of the public. Had there been in her home a quickly available list of button-removing specialists her agitated finger could have wiggle-waggled down the "P's" to "pearl" and thence to the sub-index, "from pajamas." Instantly she could have had at her command the world's best source of knowledge on the matter—a man whose days and nights were spent in studying just this one subject.

MANY of the beautiful advertisements we see in magazines and newspapers represent the combined work of from four to as many as ten "specializing artists." Surely the advertisers are better served by this system than by the old one where a single artist tried to perfect his hand and eye in all the branches of commercial art, and we who look at advertising find our aesthetic senses more adroitly tickled.

Not only in the advertising field, but in most other professional and scientific lines, as well as business, this idea of super-splitting of the work among many men, so that each may become expert in his line, has taken hold strongly.

SAID Emerson: "A man is like a bit of Labrador spar, which has no lustre as you turn it in your hand, until you come to a particular angle; then it shows deep and beautiful colors. There is no adaptation or universal applicability in men, but *each has his special talent,* and the mastery of successful men consists in adroitly keeping themselves where and when that turn shall oftenest be practiced."

He seems to have hit it, in a single paragraph!

Each of us has a certain uniqueness that differentiates us from other men—a peculiar twist in our make-up. Whether we are successes or failures depends upon how well we succeed in finding that "particular angle" and how skilfully we expose only that side to the world.

By constant use this single, sparkling facet of our nature becomes so polished that in its gleam men forget our duller sides.

Our forefathers had an expression with which they subtly confounded the aspirations of the all-'round man: "Jack of all trades, and master of none," an implication, too true, that he who attempted to fully exploit at once the whole of his nature ended sadly by developing no mastery of any; and they culled from their experiences a suggestive phrase, "a round peg in a square hole" to describe him who had unfortunately selected the wrong facet of his capacity to concentrate upon.

No man can hope to be a genius in all branches of human activity. If he is clever at bookkeeping he undoubtedly will be a dullard in conversation; while if he finds his peculiar bent is *post-prandial* oratory the chances are he will concentrate upon its development to such an extent that he cannot keep balanced a simple pocket checkbook!

An artistic or creative temperament is rarely keen at business organization; and few good business organizers can write or paint well. The doctor cannot add and the accountant is poor at maintaining his health.

Specialism, however, need not necessarily mean the death of one's versatility. He may still be versatile and enjoy and do well many things, yet pick from his group of accomplishments one to focus his keenest art upon which, viewed

in the cold, broad light of this practical world is brighter somewhat than the others.

No Binet test, no advice from friend or foe, no mystical, magical formula can aid one in selecting this, the brightest of his many sides; it may be chosen only by the carpenter's "cut-and-try" system—a series of partial attempts, failures, rejections and adjustments, until the brilliant gleam of the one outstanding trait so beacons itself upon others that one knows no mistake is being made in choosing it for his guiding star to what men call individual success.

One must, however, not mistake an *aspiration* for a *talent*, a *desire* to do for an *ability* to do—the world, properly, refuses to pay for the best of mental intentions, but only for actual results.

Having discovered this "particular angle, with its deep and beautiful colors" he is on the high road to success and will arrive there if his motive power of ambition is forceful enough.

IN SPECIALIZING there are two dangers for the individual to be wary of: first, the fact that sustained effort along any one line tends to have a laming effect on others—the man may become an adept in a picked subject and a downright numskull on every other topic in the world, or in the idiom of today: "a regular nut!"

He who attempts specialism should make a determined effort to preserve some sort of equity between his genius and the other accomplishments necessary to give him a semblance of balance in the eyes of his fellow men.

The second danger is that, having made a success in his one specialty and gained the acclaim of mankind, he permit the loud huzzahs of the multitude to deafen his intellect so far that he vainly conceives himself equal master of all arts and sciences. From the pages of history we who read and understand learn that to this one fault can be traced the ignominious downfall of many who, Icarus-like, had but risen to the heights on the wings of their specialty when the hot, splendorous suns of the throng's adoration melted the wax which held their wings and plunged them dolefully down into the Sea of Oblivion.

Napoleon, specialist in slaughter, rode his chosen talent to the crest of history's page. He fell when he assayed a rulership that demanded for success drawing room diplomacy and tact which his ruthless warfare in the field had robbed him of.

Lucky those, like Roosevelt and Burbank, whom death takes with the din of the world's applause in their ears, before they have time to venture into failure in unknown fields outside their specialty.

FROM Fulton's "Clermont," first steamboat, to the Hertzian wave upon which our radio intelligence travels, our inventions have come to us from men who cast aside all but one ambition—who focussed the burning heat of their intellectual energy upon one spot until it burst into the flame of achievement.

We owe, individually and collectively, a great deal to the more or less unconscious specialism of those who have passed and bestowed upon us the fruits of their work. How much more will ages to come owe us if we practice *conscious* specialism—if we concentrate, each of us, upon one thing for which we have the talent, do it better than it has ever been done before, and give the world something it needs.

FOR ALL FUNGOUS DISEASES OF SEEDS, PLANTS, BULBS CORMS AND SOILS—

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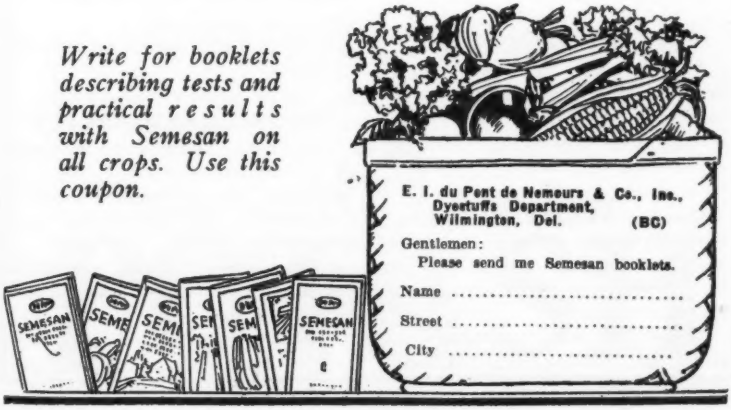
SUPPLANTING Bordeaux Mixture, inorganic mercuric disinfectants, and corrosive sublimates. Tested by practically every Experimental Station and Agricultural College, and highly recommended. Widely used for all field crops.

Semesan can be used as a dust or a liquid disinfectant. No special equipment or skill required. Highly toxic to fungi, although harmless to plant life. Low grade seeds, when treated with Semesan, have frequently shown 80 to 100 per cent increased germination and the resulting plants were very much sturdier.

Write for booklets describing tests and practical results with Semesan on all crops. Use this coupon.



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Gentlemen:
Please send me Semesan booklets.

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SEARCH OF THE AGES

"Father," said George, who had just come from school, "I am tired of my arithmetic."

"What makes you disgusted?" queried the father.

"Every problem I have," replied the boy, "says to find the common denominator."

"Great Scott!" exclaimed the parent, "haven't they found that thing yet? They were hunting for it when I was a boy."

Tramp—"Wontcha gimme a quarter?"

Abie—"No, no; biziness is hard. I ain't got no quarter."

Tramp—"Well, then, gimme a dime for a bed."

Abie—"Now you're talkin'. Where is der bed?"

Binks—"Where's the best place to hold the World's Fair?"

Jinks—"Round the waist."

SILENT MISCHIEF

A. H. writes—"The mosquito is like a child; the moment he stops making a noise you know he is getting into something."—*Boston Transcript.*

Speeder in Court: "Your Honor, I wasn't going 40 miles an hour. Nor was I going 30, nor 20, nor 10. I was hardly moving when the officer came up."

Judge: "I'll have to stop this or you'll be backing over someone. Ten dollars!"

REVERENCE, ROYALTY AND RISQUE

The Professor was giving his pupils some pointers in short-story writing.

"Three things are necessary in in the successful short story," he said. "There must be a touch of reverence, some reference to royalty and just a little of the risque. See if you can write something for me that will touch on these points."

The next day, one of the budding authors handed in the following: "My God," cried the princess, "take your hand off my knee!"

"Rastus."

"What you want, Mandy?"

"Don't forget to fetch me home a bar of tar soap. Ah aims to keep my school-girl compleckshun."

Bobby—"Pa, what becomes of a baseball player when he gets old and blind and deaf?"

Father—"They make an umpire of him."

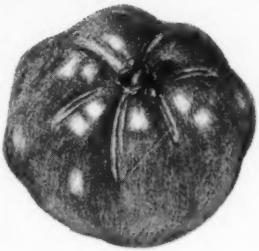
WRONG NATIONALITY

Ole Olson, hanging on a strap in a crowded street car, lost his balance as the car rounded a curve, and sank plump into the lap of a lady passenger.

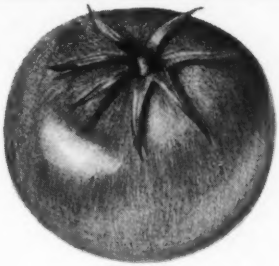
"Who and what do you think you are?" demanded the woman hotly.

"Har, har," chuckled Ole; "Ay taught Ay bane a Svede, but Ay am a Laplander Ay guess."

Printed in U. S. A.



No Potash



Potash

Better Tomatoes

DO your tomatoes ever develop puffs or crack badly around the stem end? Do they lack firmness and color? Do they fail to hold up during shipping?

Then try using more potash in your fertilizer. Many growers have found that their tomatoes have a much better chance of being free from puffs and cracks and will ship in excellent condition when plenty of potash has been supplied. It is certainly well worth the small extra cost to take this precaution.

Remember, too, that tomatoes are heavy feeders. To give the best returns they need abundant potash combined with other plant foods. If other conditions are right you will find, as a general rule that quality, yield and early ripening of your fruit increase in proportion to the amount of properly balanced plant food supplied. Some of the most successful growers use 1000 to 2000 lbs. per acre of a 8-4-6 or 10-4-6 fertilizer mixture.

Plan now for profits later. Study the potash needs of your soil and crop and see that they are well supplied.

FREE: A copy of Better Truck Crops containing useful advice on tomato growing will be mailed you on request.

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POTASH

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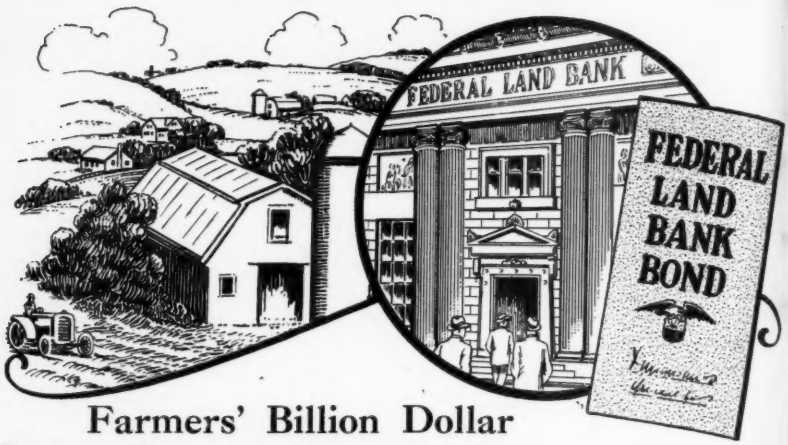

Farmers' Billion Dollar Borrowing and Investing System

THE twelve Federal Land Banks are now the largest group of mutual farm mortgage institutions in the world. They have loaned over $1,250,000,000 to more than 400,000 farmers.

Building a More Prosperous Agriculture

Interest rates have been equalized and, in many sections, much reduced. Short-term loans with their frequent renewals have been converted into long-term loans which are automatically cancelled by small semi-annual payments.

To provide funds for these helpful loans, Federal Land Bank Bonds are issued in convenient denominations—$40, $100, $500, $1,000, $5,000 and $10,000. These Bonds are completely tax free; the present interest rate is 4¼%.

Every Bond is secured by first mortgages and guaranteed by *all* of the twelve Federal Land Banks. This guarantee, backed by combined capital and reserves of more than $65,000,000, makes every one of these Bonds equally safe. When there are savings to invest, remember **Federal Land Bank Bonds.**

These Bonds are always available at any Federal Land Bank

When you need a loan, see the Secretary-Treasurer of your local National Farm Loan Association or write your Federal Land Bank.

Send for free copy of Federal Farm Loan Circular No. 16, "Financing the Farmer," to any Federal Land Bank or to

Charles E. Lobdell, *Fiscal Agent*

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Spokane, Wash.
Springfield, Mass.
St. Louis, Mo.
St. Paul, Minn.
Wichita, Kan.

Federal Land Banks, Washington, D. C.